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TECHNICAL SPECIFICATION

## **Plugtests™ scenarios for Mission Critical Services**

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## Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee TETRA and Critical Communications Evolution (TCCE).

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## Modal verbs terminology

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

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# 1 Scope

The present document specifies interoperability tests with the purpose of supporting the Mission Critical Push To Talk (MCPTT) Plugtests™ events.

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## 2 References

### 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are necessary for the application of the present document.

- [1] ETSI TS 122 179 (V15.2.0): "LTE; Mission Critical Push to Talk (MCPTT) over LTE; Stage 1 (3GPP TS 22.179 version 15.2.0 Release 15)".
- [2] ETSI TS 123 280 (V15.7.0): "LTE; Common functional architecture to support mission critical services; Stage 2 (3GPP TS 23.280 version 15.7.0 Release 15)".
- [3] ETSI TS 123 281 (V14.4.0): "LTE; Functional architecture and information flows to support Mission Critical Video (MCVideo); Stage 2 (3GPP TS 23.281 version 14.4.0 Release 14)".
- [4] ETSI TS 123 379 (V15.6.0): "LTE; Functional architecture and information flows to support Mission Critical Push To Talk (MCPTT); Stage 2 (3GPP TS 23.379 version 15.6.0 Release 15)".
- [5] Void.
- [6] ETSI TS 124 229 (V15.9.0): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3 (3GPP TS 24.229 version 15.9.0 Release 15)".
- [7] ETSI TS 124 281 (V15.7.0): "LTE; Mission Critical Video (MCVideo) signalling control; Protocol specification (3GPP TS 24.281 version 15.7.0 Release 15)".
- [8] ETSI TS 124 282 (V15.7.0): "LTE; Mission Critical Data (MCData) signalling control; Protocol specification (3GPP TS 24.282 version 15.7.0 Release 15)".
- [9] ETSI TS 124 379 (V15.7.0): "LTE; Mission Critical Push To Talk (MCPTT) call control; Protocol specification (3GPP TS 24.379 version 15.7.0 Release 15)".
- [10] ETSI TS 124 380 (V15.5.0): "LTE; Mission Critical Push To Talk (MCPTT) media plane control; Protocol specification (3GPP TS 24.380 version 15.5.0 Release 15)".
- [11] ETSI TS 124 481 (V15.3.0): "LTE; Mission Critical Services (MCS) group management; Protocol specification (3GPP TS 24.481 version 15.3.0 Release 15)".
- [12] ETSI TS 124 482 (V15.0.0): "LTE; Mission Critical Services (MCS) identity management; Protocol specification (3GPP TS 24.482 version 15.0.0 Release 15)".
- [13] Void.

- [14] ETSI TS 124 484 (V15.6.0): "LTE; Mission Critical Services (MCS) configuration management; Protocol specification (3GPP TS 24.484 version 15.6.0 Release 15)".
- [15] ETSI TS 124 581 (V15.4.0): "LTE; Mission Critical Video (MCVideo) media plane control; Protocol specification (3GPP TS 24.581 version 15.4.0 Release 15)".
- [16] Void.
- [17] ETSI TS 124 582 (V15.0.0): "LTE; Mission Critical Data (MCData) media plane control; Protocol specification (3GPP TS 24.582 version 15.0.0 Release 15)".
- [18] ETSI TS 126 179 (V15.0.0): "LTE; Mission Critical Push To Talk (MCPTT); Codecs and media handling (3GPP TS 26.179 version 15.0.0 Release 15)".
- [19] ETSI TS 126 346 (V15.4.0): "Universal Mobile Telecommunications System (UMTS); LTE; Multimedia Broadcast/Multicast Service (MBMS); Protocols and codecs (3GPP TS 26.346 version 15.4.0 Release 15)".
- [20] ETSI TS 129 212 (V15.9.0): "Universal Mobile Telecommunications System (UMTS); LTE; 5G; Policy and Charging Control (PCC); Reference points (3GPP TS 29.212 version 15.9.0 Release 15)".
- [21] ETSI TS 129 214 (V15.7.0): "Universal Mobile Telecommunications System (UMTS); LTE; Policy and charging control over Rx reference point (3GPP TS 29.214 version 15.7.0 Release 15)".
- [22] Void.
- [23] ETSI TS 129 468 (V15.8.0): "Universal Mobile Telecommunications System (UMTS); LTE; Group Communication System Enablers for LTE (GCSE-LTE); MB2 reference point; Stage 3 (3GPP TS 29.468 version 15.8.0 Release 15)".
- [24] ETSI TS 133 180 (V15.7.0): "LTE; Security of the mission critical service (3GPP TS 33.180 version 15.7.0 Release 15)".
- [25] IETF RFC 3515: "The Session Initiation Protocol (SIP) Refer Method".
- [26] IETF RFC 3856: "A Presence Event Package for the Session Initiation Protocol (SIP)".
- [27] IETF RFC 3903: "Session Initiation Protocol (SIP) Extension or Event State Publication".
- [28] IETF RFC 4488: "Suppression of Session Initiation Protocol (SIP) REFER Method Implicit Subscription".
- [29] IETF RFC 4825: "The Extensible Markup Language (XML) Configuration Access Protocol (XCAP)".
- [30] IETF RFC 5366: "Conference Establishment Using Request-Contained Lists in the Session Initiation Protocol (SIP)".
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- [32] IETF RFC 5875: "An Extensible Markup Language (XML) Configuration Access Protocol (XCAP) Diff Event Package".
- [33] IETF RFC 6135: "An Alternative Connection Model for the Message Session Relay Protocol (MSRP)".
- [34] IETF RFC 6665: "SIP-Specific Event Notification".
- [35] IETF RFC 7647: "Clarifications for the use of REFER with RFC 6665".
- [36] OMA-TS-XDM-Core-V2-1-20120403-A: "XML Document Management (XDM) Specification, V2.1".

NOTE: Available at [https://www.openmobilealliance.org/release/XDM/V2\\_1-20120403-A/OMA-TS-XDM\\_Core-V2\\_1-20120403-A.pdf](https://www.openmobilealliance.org/release/XDM/V2_1-20120403-A/OMA-TS-XDM_Core-V2_1-20120403-A.pdf).

- [37] OMA-TS-XDM-Group-V1-1-1-20170124-A: "Group XDM Specification, V1.1.1".
- NOTE: Available at [http://www.openmobilealliance.org/release/XDM/V2\\_2\\_1-20170124-A/OMA-TS-XDM\\_Group-V1\\_1\\_1-20170124-A.pdf](http://www.openmobilealliance.org/release/XDM/V2_2_1-20170124-A/OMA-TS-XDM_Group-V1_1_1-20170124-A.pdf).
- [38] IETF RFC 7230: "Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing".
- [39] IETF RFC 8446: "The Transport Layer Security (TLS) Protocol Version 1.3".
- [40] IETF RFC 6101: "The Secure Sockets Layer (SSL) Protocol Version 3.0".
- [41] IETF RFC 4975: "The Message Session Relay Protocol (MSRP)".
- [42] IETF RFC 3428 (December 2002): "Session Initiation Protocol (SIP) Extension for Instant Messaging".
- [43] IETF RFC 3863 (August 2004): "Presence Information Data Format (PIDF)".

## 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

Not applicable.

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## 3 Definition of terms, symbols and abbreviations

### 3.1 Terms

Void.

### 3.2 Symbols

Void.

### 3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AAA	Authentication Authorization Accounting
AFFIL	AFFILiation
AMR	Adaptative Multi-Rate audio codec
AMR-WB	Adaptative Multi-Rate audio codec Wideband
APN	Access Point Name
APP	APPLication
ARP	Address Resolution Protocol
AS	Application Server
AUID	Application Unique ID
AVP	Attribute-Value Pairs
BM-SC	Broadcast Multicast - Service Centre
CMC	Configuration Management Client

CMS	Configuration Management Server
CONN	CONNectivity
CSC	Common Services Core
CSCF	Call Session Control Function
CSK	Client-Server Key
DTLS	Datagram Transport Layer Security
eMBMS	evolved Multimedia Broadcast Multicast Service
EPS	Evolved Packet System
FC	Floor Control
FD	File Distribution
FFS	For Further Study
GAR	GCS-Action-Request
GBR	Guaranteed Bit Rate
GC	General Client
GCS-AS	Group Communication Service - Application Server
GCSE	Group Communication Service Enabler
GKTP	Group Key Transport Payload
GMC	Group Management Client
GMK	Group Master Key
GMOP	Group Management OPeration
GMS	Group Management Server
GNR	GCS-Notification-Request
HTTP	Hyper Text Transfer Protocol
ICE	In Case of Emergency
IdMS	Identity Management Server
IE	Information Element
IFS	Interoperable Functions Statement
IMPU	IP Multimedia PUBlic identity
IMS	IP Multimedia Subsystem
IMS_RX	Policy and charging control over RX reference point
IP	Internet Protocol
ITD	Interoperability Test Description
KDF	Key Derivation Function
KMS	Key Management Server
LOC	LOCation
LTE	Long Term Evolution
MBMS	Multimedia Broadcast and Multicast Service
MBR	Maximum Bit Rate
MC	MultiCast
MC-APN	Mission Critical Access Point Name
MCC	Mission Critical Communication
MCCP	Mission Critical MBMS subchannel Control Protocol
MCDATA	Mission Critical Data
MCMC	ASCII name string for Mission Critical MBMS subchannel Control Protocol
MCPC	Mission Critical Pre-established session Control
MCPT	ASCII name string for Mission Critical Push-to-Talk
MCPTT	Mission Critical Push-To-Talk
MCPTT ID	MCPTT user IDentity
MCS	Mission Critical Services
MCVideo	Mission Critical Video
MCX	Mission Critical Service
MEA	MCPTT Emergency Alert
MEG	MCPTT Emergency Group
MEGC	MCPTT Emergency Group Call
MES	MCPTT Emergency State
MIG	MCPTT Imminent peril Group
MIGC	MCPTT Imminent peril Group Call
MIME	Multipurpose Internet Mail Extensions
MNC	Mobile Network Code
MO	Management Object
MSCCK	MBMS SubChannel Control Key
MSF	Mobile Storage Function

MSRP	Message Sending Relay Protocol
MVEA	MCVideo Emergency Alert
MVEG	MCVideo Emergency Group
MVEGC	MCVideo Emergency Group Call
MVIG	MCVideo Imminent peril Group
MVIGC	MCVideo Imminent peril Group Call
NFC	No Floor Control
OAM	Operation And Maintenance
OMA	Open Mobile Alliance
ONN	ON Network calls
OTT	Over The Top
PCC	Policy and Charging Control
PCK	Private Call Key
PCRF	Policy and Charging Rules Function
PES	Pre-Established Sessions
PLMN	Public Land Mobile Network
POST	HTTP method POST
PRF	Pseudo-Random Function
PSI	Public Service Identity
PTT	Push-To-Talk
QCI	QoS Class Identifier
RTCP	Real Time Control Protocol
RTP	Real-time Transport Protocol
RX	Reference Point
SAGE	Security Algorithms Group of Experts
SAI	Service Area Identifier
SCTP	Stream Control Transmission Protocol
SDP	Session Description Protocol
SDS	Short Data Service
SEC	SECurity
SIP	Session Initiation Protocol
SPK	Signalling Protection Key
SSL	Secure Socket Layer
SSRC	Synchronization SouRCe
TC	Transmission Control
TCCE	TETRA and Critical Communications Evolution
TCP	Transmission Control Protocol
TETRA	TErrestrial Trunked Radio
TLS	Transport Layer Security
TMGI	Temporary Mobile Group Identity
TR	Technical Report
TRT	Test Reporting Tool
TS	Technical Specification
Tx	Transmission
UE	User Equipment
UMTS	Universal Mobile Telecommunications System
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
WFC	With Floor Control
XCAP	eXtensible markup language Configuration Access Protocol
XDM	XCAP Document Management
XML	eXtended Markup Language
XUI	XCAP Unique Identifier

## 4 Conventions

### 4.1 Test Description Proforma

A Test Description (TD) is a detailed description of the process that needs to be followed to test one or more interoperable functionalities between two or more vendor implementations. A TD should include as a minimum the following elements. The following different types are defined.

**Table 1**

Interoperability Test Description			
<b>Identifier</b>	A unique test description identifier should follow a well-defined naming convention, e.g. TD/AB/XX/00		
<b>Test Objective</b>	A concise summary of the test, which should reflect its purpose and allow readers to easily distinguish this test from any other test in the present document		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>list of all the required equipment for running this test, possibly also including a (reference to) an illustration of a test architecture or test configuration</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>list of references to the base specification section(s), use case(s), requirement(s), etc., which are either used in the test or define the functionality being tested</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>list of features and capabilities in the IFS which are required to be supported by the SUT in order to execute this test (e.g. if this list contains an optional feature to be supported, then the test is optional)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>list of test specific pre-conditions that need to be met by the SUT including information about equipment configuration, i.e. precise description of the initial state of the SUT prior to start executing the test sequence</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	<type>	step description
	2		
	3		
<b>Notes</b>	<ul style="list-style-type: none"> <li>optional list of explanatory notes</li> </ul>		

- A **stimulus** corresponds to an event that triggers an EUT to proceed with a specific protocol action, like sending a message for instance.
- A **check** step consists of verifying that the EUT behaves according to the expected behaviour (for instance the EUT behaviour shows that it receives the expected message).
- A **configure** corresponds to an action to modify the EUT configuration.
- A **verify** step consists of verifying that the tested scenario provides expected results (for instance an emergency call is received at the correct PSAP and media is transmitted).

Each check step consists of the receipt of protocol messages on reference points, with valid content. The check should be performed using a trace created by a monitor tool.

### 4.2 Interoperable Functions Statement

The "Interoperable Functions Statement" (IFS) identifies the standardized functions of a DUT. These functions can be mandatory, optional or conditional (depending on other functions), and depend on the role played by the DUT. The IFS can also be used as a proforma by a vendor to identify the functions that its DUT will support when interoperating with corresponding functions from other vendors.

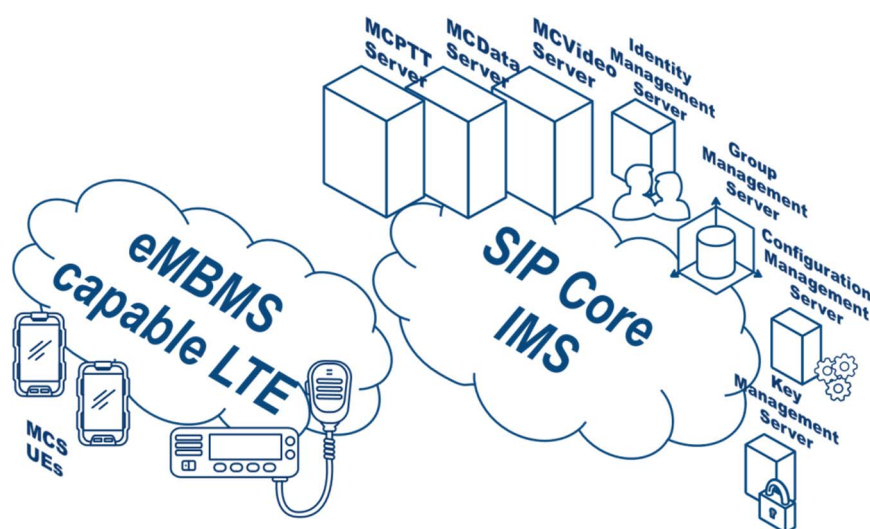


## 4.3 Test Overview

The following objectives shall be considered:

- MCPTT Private/Group Calls (unicast)
- MCPTT Group Call (eMBMS)
- MCPTT Emergency Group Call
- MCPTT Floor Control
- MCPTT Registration and service authorization
- MCPTT Affiliation
- MCPTT Location
- MCPTT Security
- MCDATA Services
- Specific selection of MCVideo Call Types
- CSC procedures (Group, Configuration, Identity and Key Management)

The basic structure to be analysed comprises MCS (MCPTT, MCDATA, MCVideo) application server(s) -both controlling and participating- and MCS UEs deployed over a generic SIP Core/IMS, LTE access network with and without MCS required PCC capabilities and native multicast support (i.e. Release 14 eMBMS). Figure 1 illustrates the basic test infrastructure.



**Figure 1: Typical MCS scenario to be considered in the second Plugtests**

In Release 13 the 3GPP already defined a comprehensive set of MCPTT Calls (see figure 2). For the second Plugtests additional Call Types in Release 14 (see figure 3) will be considered (First-to-answer call, Ambient Listening and callbacks).

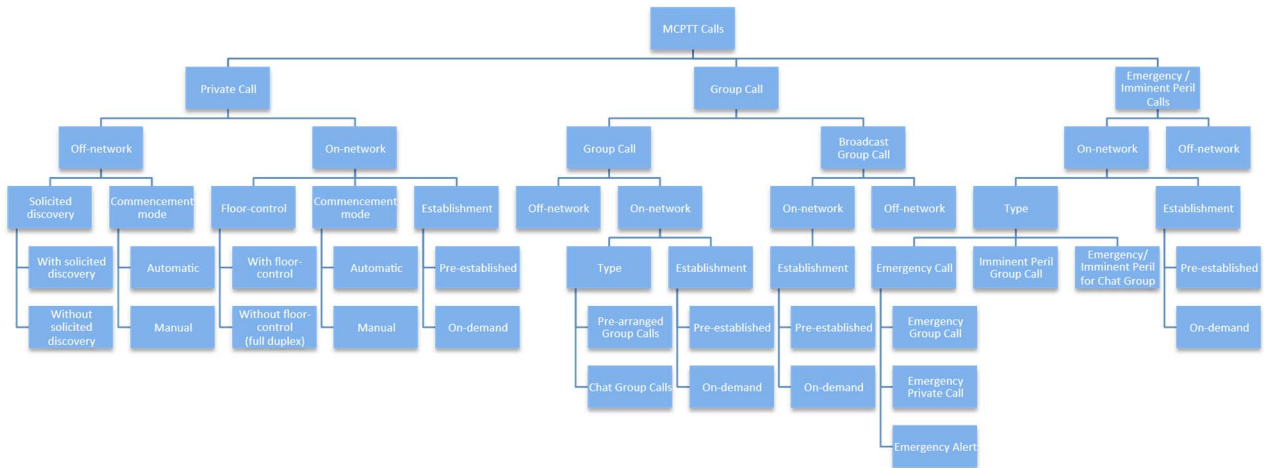


Figure 2: MCPTT call types in Release 13

Apart from "Mission Critical Voice" (MCPTT), MCDData and MCVideo have been also defined in Release 14, with their associated call types (see figures 4 and 5). MCDData and MCVideo have a set of common -duplicated- set of features with MCPTT, such as service deployment over SIP Core/IMS, registration, affiliation, location and CSC mechanisms. In this 2<sup>nd</sup> Plugtests, MCPTT will be used for the testing of these common features and MCDData/MCVideo specific services and calls only.

Due to the large number of different cases and technologies involved, on the context of the 1<sup>st</sup> Plugtests the configurations in clause 5 and Test Cases in clause 7 will be initially analysed. Definitions of each call are collected from related normative references in clause 2.1.

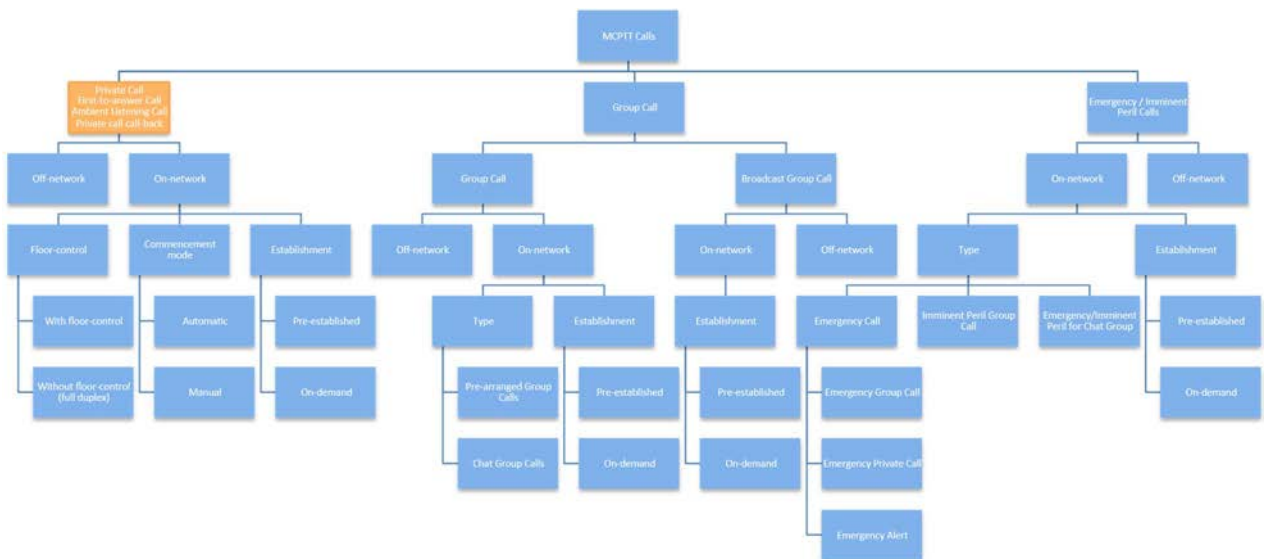


Figure 3: MCPTT call types in Release 14

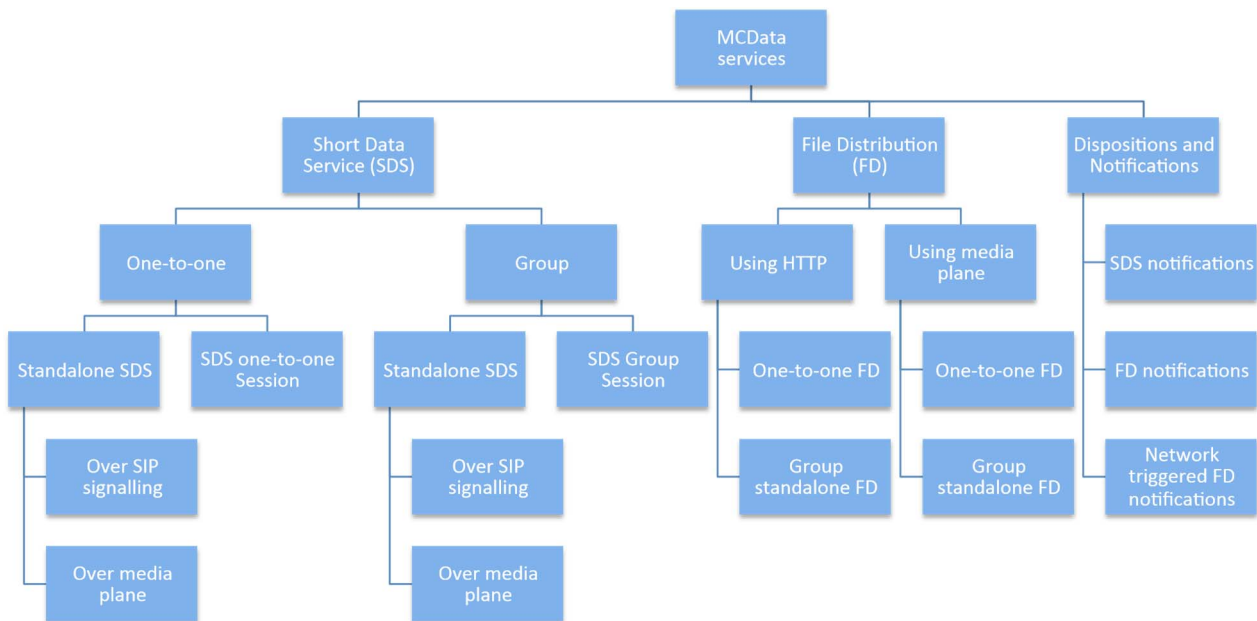


Figure 4: MCDATA services in Release 14

Considering the inclusion of MCDATA and MCVideo and the need for, not only re-testing core MCPTT features, but also Security and CSC interfaces, the number of possible test cases grows dramatically. In order to group those test cases systematically following the rationale in the 1<sup>st</sup> Plugtests the following high level test objectives are proposed as outcomes of the testing.

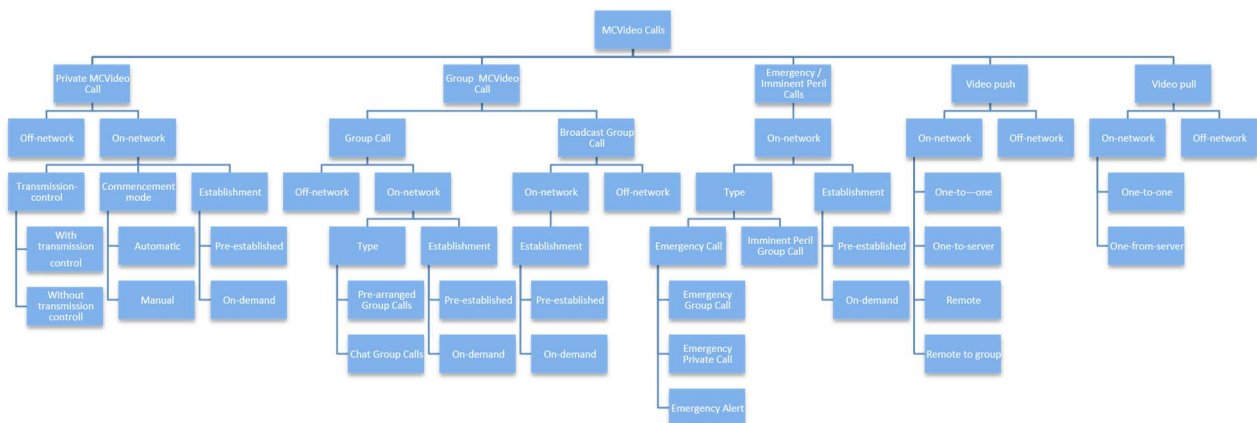


Figure 5: MCVideo call types in Release 14

The following high level test objectives are covered in the present document:

- Connectivity (CONN):** Tests cover basic connectivity between functional elements at different levels including Access Network (LTE), IP Network, SIP/IMS and MCPTT/MCDATA/MCVideo Application level. At LTE level, unicast and more particularly eMBMS multicast connectivity will be evaluated. IP layers targets pure OTT connectivity regardless the underlying access network. SIP connectivity tests check proper deployment of MCS AS over the selected SIP Core/IMS so that all SIP messages are successfully delivered from MCS UEs to Participating/Controlling MCS Servers and vice versa. Application level refers to e2e signalling, media, floor controlling (and other involved) protocols in use. All CONN tests could be tentatively evaluated over all the different configurations (see clause 5). Additionally, low level configuration specific details (i.e. MCPTT and eMBMS bearer management) will be considered in the PCC and eMBMS specific objectives.
- Floor Controlling (FC):** Although basic Floor Controlling procedures will be tentatively evaluated during the tests associated with the first CONN objective, FC will entail comprehensive interoperability analysis of all defined interactions, including prioritization and pre-emptiveness mechanisms. Note this would be originally considered for MCPTT till MCVideo transmission control mechanisms are clarified.

- **Policing (PCC):** Comprises specific checking proper LTE bearer signalling and allocation.
- **eMBMS (EMBMS):** Comprises checking of eMBMS specific signalling.
- **Registration and authorization (REGAUTH):** Comprises MCPTT Client registration (MCData and MCVideo are similar and will not result on specific test-cases).
- **Affiliation (AFFIL):** Comprises MCPTT Client explicit and implicit affiliation.
- **Location (LOC):** Comprises Location configuration, retrieval and submission procedures for MCPTT (MCData and MCVideo are similar and will not result on specific test-cases).
- **OAM procedures (CSC):** Comprises OAM related IdMS, CMS, GMS and KMS interfacing procedures. Unless otherwise specified MCPTT only will be considered.
- **Security (SEC):** Comprises security related procedures ((de-)cyphering, key retrieval considered in KMS-related test cases in CSC test cases).
- **QoS support (KPI):** Comprises checking e2e QoS values fulfilling pre-defined thresholds for the defined KPIs.
- **MCVideo Transmission Control (TC):** Similarly to the FC case, TC will entail comprehensive interoperability analysis of the defined interactions for Transmission Control in MCVideo.
- **Server-to-Server communications (S2S):** The interfaces between controlling and non-controlling functions in different configurations will be considered.

The following lists collect the test objectives and specific test cases that are further explained in clause 7.

- **Connectivity (CONN) (96 test cases):**
  - CONN-MCPTT/GROUP/PREA/ONDEM/NFC/01 (clause 7.2.1)
    - On-demand prearranged MCPTT Group Call (clauses 10.1.1.2.1, 10.1.1.3.1.1 and 10.1.1.4 in ETSI TS 124 379 [9])
  - CONN-MCPTT/GROUP/PREA/ONDEM/NFC/02 (clause 7.2.2)
    - On-demand prearranged MCPTT Group Call (clauses 10.1.1.2.1, 10.1.1.3.1.1 and 10.1.1.4 in ETSI TS 124 379 [9]): Emergency MCPTT Group Call (clauses 6.2.8.1.1 to 6.2.8.1.8 and 6.2.8.1.13 to 6.2.8.1.17 in ETSI TS 124 379 [9])
  - CONN-MCPTT/GROUP/PREA/ONDEM/NFC/03 (clause 7.2.3)
    - On-demand prearranged MCPTT Group Call (clauses 10.1.1.2.1, 10.1.1.3.1.1 and 10.1.1.4 in ETSI TS 124 379 [9]): Imminent Peril MCPTT Group Call (clause 6.2.8.1.9-12 in ETSI TS 124 379 [9])
  - CONN-MCPTT/GROUP/PREA/ONDEM/NFC/04 (clause 7.2.4)
    - On-demand prearranged MCPTT Group Call (clauses 10.1.1.2.1, 10.1.1.3.1.1 and 10.1.1.4 in ETSI TS 124 379 [9]): Broadcast MCPTT Group Call (clause 6.2.8.2 in ETSI TS 124 379 [9])
  - CONN-MCPTT/GROUP/PREA/ONDEM/NFC/05 (clause 7.2.5)
    - On-demand prearranged MCPTT Group Call (clauses 10.1.1.2.1, 10.1.1.3.1.1 and 10.1.1.4 in ETSI TS 124 379 [9]): Upgrade to in-progress emergency or imminent peril (clauses 10.1.1.2.1.3, 10.1.2.2.1.4 in ETSI TS 124 379 [9])
  - CONN-MCPTT/GROUP/PREA/ONDEM/NFC/06 (clause 7.2.6)
    - Termination of an on-demand prearranged MCPTT Group Calls (clauses 10.1.1.2.3.1 and 10.1.1.3.3.1 in ETSI TS 124 379 [9])

- CONN-MCPTT/GROUP/PREA/PRE/NFC/01 (clause 7.2.7)
  - Prearranged MCPTT Group Call using pre-established session (clauses 10.1.1.2.2, 10.1.1.3.1.2 and 10.1.1.4 in ETSI TS 124 379 [9])
- CONN-MCPTT/GROUP/PREA/PRE/NFC/02 (clause 7.2.8)
  - Termination of a prearranged MCPTT Group Call using pre-established session (clauses 10.1.1.2.3.2 and 10.1.1.3.3.2 in ETSI TS 124 379 [9])
- CONN-MCPTT/GROUP/CHAT/ONDEM/NFC/01 (clause 7.2.9)
  - On-demand MCPTT Chat Group Call establishment (clauses 10.1.2.2.1.1, 10.1.2.3.1.1, 10.1.2.3.1.3 and 10.1.2.4.1.1 in ETSI TS 124 379 [9])
- CONN-MCPTT/GROUP/CHAT/ONDEM/NFC/02 (clause 7.2.10)
  - Ongoing on-demand MCPTT Chat Group Call upgraded to emergency call (clauses 10.1.2.2.1.4, 10.1.2.2.1.2, 10.1.2.3.1.2, 10.1.2.3.1.4 and 10.1.2.4.1.2 in ETSI TS 124 379 [9])
- CONN-MCPTT/GROUP/CHAT/ONDEM/NFC/03 (clause 7.2.11)
  - Ongoing on-demand MCPTT Chat Group Call upgraded to imminent peril (clauses 10.1.2.2.1.4, 10.1.2.2.1.2, 10.1.2.3.1.2, 10.1.2.3.1.4 and 10.1.2.4.1.3 in ETSI TS 124 379 [9])
- CONN-MCPTT/GROUP/CHAT/ONDEM/NFC/04 (clause 7.2.12)
  - Cancellation of the in-progress emergency condition of an on demand MCPTT Chat Group Call (clauses 10.1.2.2.1.3, 10.1.2.2.1.2, 10.1.2.3.1.2, 10.1.2.3.1.4 and 10.1.2.4.1.2 in ETSI TS 124 379 [9])
- CONN-MCPTT/GROUP/CHAT/ONDEM/NFC/05 (clause 7.2.13)
  - Cancellation of the in-progress imminent peril condition of an undemand MCPTT Chat Group Call (clauses 10.1.2.2.1.5, 10.1.2.2.1.2, 10.1.2.3.1.2, 10.1.2.3.1.4 and 10.1.2.4.1.3 in ETSI TS 124 379 [9])
- CONN-MCPTT/GROUP/CHAT/PRE/NFC/01 (clause 7.2.14)
  - MCPTT Chat Group Call establishment within a pre-established session (clauses 10.1.2.2.2, 10.1.2.2.1.6, 10.1.2.3.2.1, 10.1.2.3.2.2 and 10.1.2.4.1.1 in ETSI TS 124 379 [9])
- CONN-MCPTT/PRIV/AUTO/ONDEM/WFC/NFC/01 (clause 7.2.15)
  - On-demand private MCPTT call with floor control (clause 11.1.1.2.1 in ETSI TS 124 379 [9]) and automatic commencement mode, see IETF RFC 5373 [31])
- CONN-MCPTT/PRIV/MAN/ONDEM/WFC/NFC/01 (clause 7.2.16)
  - On-demand private MCPTT call with floor control manual mode (clause 11.1.1.2.1 in ETSI TS 124 379 [9]) and manual commencement mode, see IETF RFC 5373 [31])
- CONN-MCPTT/PRIV/AUTO/PRE/WFC/NFC/01 (clause 7.2.17)
  - Pre-established private MCPTT call with floor control (clause 11.1.1.2.1 in ETSI TS 124 379 [9]) and automatic commencement mode, see IETF RFC 5373 [31])
- CONN-MCPTT/PRIV/MAN/PRE/WFC/NFC/01 (clause 7.2.18)
  - Pre-established private MCPTT call with floor control manual mode (clause 11.1.1.2.1 in ETSI TS 124 379 [9]) and manual commencement mode, see IETF RFC 5373 [31])
- CONN-MCPTT/PRIV/AUTO/ONDEM/WOFC/01 (clause 7.2.19)
  - On-demand private MCPTT call without floor control (clause 11.1.1.2.1 in ETSI TS 124 379 [9]) and automatic commencement mode, see IETF RFC 5373 [31])

- CONN-MCPTT/PRIV/MAN/ONDEM/WOFC/01 (clause 7.2.20)
  - On-demand private MCPTT call without floor control manual mode (clause 11.1.1.2.1 in ETSI TS 124 379 [9]) and manual commencement mode, see IETF RFC 5373 [31])
- CONN-MCPTT/PRIV/AUTO/PRE/WOFC/01 (clause 7.2.21)
  - Pre-established private MCPTT call without floor control (clause 11.1.1.2.1 in ETSI TS 124 379 [9]) and automatic commencement mode, see IETF RFC 5373 [31])
- CONN-MCPTT/PRIV/MAN/PRE/WOFC/01 (clause 7.2.22)
  - Pre-established private MCPTT call without floor control manual mode (clause 11.1.1.2.1 in ETSI TS 124 379 [9]) and manual commencement mode, see IETF RFC 5373 [31])
- CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/01 (clause 7.2.23)
  - MCPTT User initiates an on-demand first-to-answer MCPTT call with floor control (clauses 11.1.1.2.1, 11.1.1.3.1.1 and 11.1.1.4 in ETSI TS 124 379 [9])
- CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WOFC/NFC/01 (clause 7.2.24)
  - MCPTT User initiates an on-demand first-to-answer MCPTT call without floor control (clause 11.1.2 in ETSI TS 124 379 [9])
- CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/01 (clause 7.2.25)
  - MCPTT User initiates an on-demand first-to-answer MCPTT call with floor control using pre-established sessions (clauses 11.1.1.2.2, 11.1.1.3.1.2, 11.1.3.2.2 and 11.1.1.4 in ETSI TS 124 379 [9] and IETF RFC 5366 [30])
- CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WOFC/01 (clause 7.2.26)
  - MCPTT User initiates a pre-established first-to-answer MCPTT call in manual commencement mode without floor control
- CONN-MCPTT/ONN/CALLBACK/SETUP/01 (clause 7.2.27)
  - MCPTT User setups a private-call callback (clauses 11.1.1.2.1, 11.1.1.3.1.1 and 11.1.1.4 in ETSI TS 124 379 [9])
- CONN-MCPTT/ONN/CALLBACK/CANCEL/01 (clause 7.2.28)
  - MCPTT User cancels a private-call callback (clause 11.1.2 in ETSI TS 124 379 [9])
- CONN-MCPTT/ONN/CALLBACK/FULFIL/01 (clause 7.2.29)
  - MCPTT User fulfils a private-call callback
- CONN-MCPTT/ONN/AMBIENT/ONDEM/LOCAL/01 (clause 7.2.30)
  - MCPTT User setups locally an on-demand ambient listening call (clauses 11.1.6.2.1.1, 11.1.6.3 and 11.1.6.4 in ETSI TS 124 379 [9])
- CONN-MCPTT/ONN/AMBIENT/ONDEM/LOCAL/02 (clause 7.2.31)
  - MCPTT User releases locally an on-demand ambient listening call (clause 11.1.6.2.1.3 in ETSI TS 124 379 [9])
- CONN-MCPTT/ONN/AMBIENT/PRE/LOCAL/01 (clause 7.2.32)
  - MCPTT User setups locally an ambient listening call using preestablished session (clause 11.1.6.2.2 in ETSI TS 123 379 [4])

- CONN-MCPTT/ONN/AMBIENT/PRE/LOCAL/02 (clause 7.2.33)
  - MCPTT User releases locally an ambient listening call using preestablished session (clause 11.1.6.2.2.3 in ETSI TS 124 379 [9])
- CONN-MCPTT/ONN/AMBIENT/ONDEM/REMOTE/01 (clause 7.2.34)
  - MCPTT User setups remotely an on-demand ambient listening call (clause 11.1.6.2.1.1 in ETSI TS 124 379 [9])
- CONN-MCPTT/ONN/AMBIENT/ONDEM/REMOTE/02 (clause 7.2.35)
  - MCPTT User releases remotely an on-demand ambient listening call (clause 11.1.6.2.1.3 in ETSI TS 124 379 [9])
- CONN-MCPTT/ONN/AMBIENT/PRE/REMOTE/01 (clause 7.2.36)
  - MCPTT User setups remotely an ambient listening call using preestablished session
- CONN-MCPTT/ONN/AMBIENT/PRE/REMOTE/02 (clause 7.2.37)
  - MCPTT User releases remotely an ambient listening call using preestablished session
- CONN-MCPTT/ONN/GROUPCHANGE/01 (clause 7.2.38)
  - Remote change of selected group (clause 10.1.4 in ETSI TS 124 379 [9])
- CONN-MCDATA/O2O/STANDALONE/SDS/SIP/01 (clause 7.2.39)
  - One-to-one standalone SDS over SIP
- CONN-MCDATA/O2O/STANDALONE/SDS/MSRP/01 (clause 7.2.40)
  - One-to-one standalone SDS over media plane (MSRP)
- CONN-MCDATA/O2O/SESSION/SDS/MSRP/01 (clause 7.2.41)
  - One-to-one SDS session
- CONN-MCDATA/GROUP/STANDALONE/SDS/SIP/01 (clause 7.2.42)
  - Group standalone SDS over SIP
- CONN-MCDATA/GROUP/STANDALONE/SDS/MSRP/01 (clause 7.2.43)
  - Group standalone SDS over media plane (MSRP)
- CONN-MCDATA/GROUP/SESSION/SDS/MSRP/01 (clause 7.2.44)
  - Group SDS session
- CONN-MCDATA/O2O/FD/HTTP/01 (clause 7.2.45)
  - One-to-one FD using HTTP
- CONN-MCDATA/GROUP/FD/HTTP/01 (clause 7.2.46)
  - Group FD using HTTP
- CONN-MCDATA/O2O/FD/MSRP/01 (clause 7.2.47)
  - One-to-one FD using media plane (MSRP)
- CONN-MCDATA/GROUP/FD/MSRP/01 (clause 7.2.48)
  - Group FD using media plane (MSRP)

- CONN-MCDATA/DISNOT/SDS/01 (clause 7.2.49)
  - Standalone SDS with delivered and read notification
- CONN-MCDATA/DISNOT/SDS/02 (clause 7.2.50)
  - Group standalone SDS with delivered and read notification
- CONN-MCDATA/DISNOT/FD/01 (clause 7.2.51)
  - One-to-one FD using HTTP with file download completed notification
- CONN-MCDATA/DISNOT/FD/02 (clause 7.2.52)
  - Group FD using HTTP with file download completed notification
- CONN-MCDATA/NET/FD/01 (clause 7.2.53)
  - Network triggered FD notifications
- CONN-MCVIDEO/ONN/PRIV/AUTO/ONDEM/WTC/NTC/01 (clause 7.2.54)
  - On-demand private MCVideo call in automatic commencement mode with transmission control
- CONN-MCVIDEO/ONN/PRIV/AUTO/ONDEM/WOTC/01 (clause 7.2.55)
  - On-demand private MCVideo call in automatic commencement mode without transmission control
- CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/01 (clause 7.2.56)
  - On-demand prearranged MCVideo Group Call
- CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/01 (clause 7.2.57)
  - On-demand MCVideo Chat Group Call
- CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/07 (clause 7.2.58)
  - Late call entry of a MCPTT User during an on-demand prearranged MCPTT Group Call
- CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/03 (clause 7.2.59)
  - Late call entry of a MCPTT User during a prearranged MCPTT Group Call using pre-established session
- CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/08 (clause 7.2.60)
  - Rejoin of a MCPTT User during an on-demand prearranged MCPTT Group Call
- CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/04 (clause 7.2.61)
  - Rejoin of a MCPTT User during an on-demand prearranged MCPTT Group Call using pre-established session
- CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/SUBCONF/01 (clause 7.2.62)
  - Subscription to Conference Event package
- CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/02 (clause 7.2.63)
  - MCPTT User initiates an on-demand private MCPTT emergency call in automatic commencement model with floor control
- CONN-MCPTT/ONN/EMERG-ALERT/MSG/01 (clause 7.2.64)
  - MCPTT User initiates an emergency alert by sending a SIP MESSAGE



- CONN-MCPTT/ONN/EMERG-ALERT/MSG/02 (clause 7.2.65)
  - MCPTT User cancels an emergency alert by sending a SIP MESSAGE
- CONN-MCPTT/ONN/EMERG-ALERT/MSG/03 (clause 7.2.66)
  - MCPTT User cancels an emergency alert originated by other user by sending a SIP MESSAGE
- CONN-MCPTT/ONN/EMERG-ALERT/MSG/04 (clause 7.2.67)
  - MCPTT client receives a notification of entry into a group geographic area
- CONN-MCPTT/ONN/EMERG-ALERT/MSG/05 (clause 7.2.68)
  - MCPTT client receives a notification of exit from a group geographic area
- CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/09 (clause 7.2.69)
  - MCPTT User exits an ongoing an on-demand prearranged MCPTT Group Call upon de-affiliation to this group
- CONN-MCDATA/ONN/O2O/FD/HTTP/02 (clause 7.2.70)
  - Receive O2O FD request with mandatory download
- CONN-MCDATA/ONN/O2O/FD/HTTP/03 (clause 7.2.71)
  - Receive O2O FD request without mandatory download
- CONN-MCDATA/ONN/DEFER/01 (clause 7.2.72)
  - Request a list of deferred group communications
- CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/SIP/02 (clause 7.2.73)
  - Send an enhanced status to an MCDData group
- CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/02 (clause 7.2.74)
  - MCVideo User upgrades an ongoing on-demand Chat Group Call to emergency call
- CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/03 (clause 7.2.75)
  - MCVideo User upgrades an ongoing on-demand Chat Group Call to imminent-peril call
- CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/04 (clause 7.2.76)
  - MCVideo User cancels the emergency condition of an on-demand Chat Group Call
- CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/05 (clause 7.2.77)
  - MCVideo User cancels the imminent-peril condition of an on-demand Chat Group Call
- CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/02 (clause 7.2.78)
  - MCVideo User initiates an on-demand prearranged MCVideo Group Call: Emergency Group Call
- CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/03 (clause 7.2.79)
  - MCVideo User initiates an on-demand prearranged MCVideo Group Call: Imminent Peril Group Call
- CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/04 (clause 7.2.80)
  - MCVideo User initiates an on-demand prearranged MCVideo Group Call: Broadcast Group Call

- CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/05 (clause 7.2.81)
  - MCVideo User initiates an on-demand prearranged MCVideo Group Call: Upgrade to in progress emergency or imminent peril
- CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/06 (clause 7.2.82)
  - MCVideo User initiates the termination of an on-demand prearranged MCVideo Group Call
- CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WOTC/NTC/01 (clause 7.2.83)
  - MCVideo User initiates an on-demand private MCVideo call in manual commencement mode without transmission control
- CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WTC/NTC/01 (clause 7.2.84)
  - MCVideo User initiates an on-demand private MCVideo call in manual commencement mode with transmission control
- CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/01 (clause 7.2.85)
  - MCVideo User setups locally an on-demand ambient viewing call
- CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/02 (clause 7.2.86)
  - MCVideo User releases remotely an on-demand ambient viewing call
- CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/01 (clause 7.2.87)
  - MCVideo User setups remotely an on-demand ambient viewing call
- CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/02 (clause 7.2.88)
  - MCVideo User releases remotely an on-demand ambient viewing call
- CONN-MCVIDEO/ONN/ONE-TO-ONE/VIDEOPULL/01 (clause 7.2.89)
  - MCVideo User initiates a one-to-one video pull in automatic commencement mode with transmission control
- CONN-MCVIDEO/ONN/ONE-FROM-SERVER/VIDEOPULL/01 (clause 7.2.90)
  - MCVideo User initiates a one-from-server video pull in automatic commencement mode with transmission control
- CONN-MCVIDEO/ONN/ONE-TO-ONE/VIDEOPUSH/01 (clause 7.2.91)
  - MCVideo User initiates a one-to-one video push in automatic commencement mode with transmission control
- CONN-MCVIDEO/ONN/ONE-TO-SERVER/VIDEOPUSH/01 (clause 7.2.92)
  - MCVideo User initiates a one-to-server video push in automatic commencement mode with transmission control
- CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/01 (clause 7.2.93)
  - MCVideo User initiates an emergency alert by sending a SIP MESSAGE
- CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/02 (clause 7.2.94)
  - MCVideo User cancels an emergency alert by sending a SIP MESSAGE
- CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/03 (clause 7.2.95)
  - MCVideo User cancels an emergency alert originated by other user by sending a SIP MESSAGE

- CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/04 (clause 7.2.96)
  - MCVideo client receives a notification of entry into a group geographic area
- **Floor Controlling (FC) (7 test cases):**
  - FC/BASIC/01 (clause 7.3.1)
    - Basic FC functionality (clause 6 in ETSI TS 124 380 [10])
  - FC/BASIC/02 (clause 7.3.2)
    - Basic FC functionality. Effect of Priorities (following the example in clause A.3.5 in ETSI TS 124 380 [10])
  - FC/ADV/01 (clause 7.3.3)
    - Floor control revoking upon expires (T2)
  - FC/ADV/02 (clause 7.3.4)
    - Floor control revoking upon release
  - FC/ADV/03 (clause 7.3.5)
    - Floor control revoking upon revoke
  - FC/FA/BASIC/01 (clause 7.3.6)
    - Sharing/Display of FA during basic FC operations
  - FC/MT/BASIC/01 (clause 7.3.7)
    - Multi-talker basic operation
- **Registration & Authorization (REGAUTH) (3 test cases):**
  - REGAUTH/IDMSAUTH/01 (clause 7.4.1)
    - MCPTT Client authentication and tokens retrieval using IdMS ETSI TS 124 482 [12]
  - REGAUTH/3PRTYREG/REGISTER/01 (clause 7.4.2)
    - MCPTT Client registration using 3<sup>rd</sup> party register (clauses 7.2.1 and 7.3.2 in ETSI TS 124 379 [9])
  - REGAUTH/PUBLISH/REGISTER/01 (clause 7.4.3)
    - MCPTT Client registration using SIP PUBLISH (clauses 7.2.2 and 7.3.3 in ETSI TS 124 379 [9])
- **Policing (PCC) (6 test cases):**
  - PCC/BEARERSETUP/01 (clause 7.5.1)
    - Unicast MC Bearer Setup by SIP Core/IMS (clauses 4.4.1 and 4.4.2 in ETSI TS 129 214 [21])
  - PCC/BEARERSETUP/02 (clause 7.5.2)
    - Unicast MC Bearer Setup by MCPTT Participating AS (clauses 4.4.1 and 4.4.2 in ETSI TS 129 214 [21])
  - PCC/BEARERUPDATE/01 (clause 7.5.3)
    - Unicast MC Bearer Update by SIP Core/IMS due to a change in the Call characteristics (i.e. upgrade to emergency call as in clause 7.2.5)

- PCC/BEARERUPDATE/02 (clause 7.5.4)
  - Unicast MC Bearer Update by MCPTT Participating AS due to a change in the Call characteristics (i.e. upgrade to emergency call as in clause 7.2.5)
- PCC/BEARERSETUP/03 (clause 7.5.5)
  - Unicast MC Bearer Setup by SIP Core/IMS using pre-established sessions (clauses 4.4.1 and 4.4.2 in ETSI TS 129 214 [21])
- PCC/BEARERSETUP/04 (clause 7.5.6)
  - Unicast MC Bearer Setup by MCPTT Participating AS using pre-established sessions (clauses 4.4.1 and 4.4.2 in ETSI TS 129 214 [21])
- **EMBMS (8 test cases)**
  - EMBMS/ACTIVATEBEARER/WPRETMGI/01 (clause 7.6.2)
    - Use of dynamically established MBMS bearers in prearranged MCPTT group calls with pre-allocated TMGIs (clauses 5.2.1 and 5.3.2 in ETSI TS 129 214 [21])
  - EMBMS/ACTIVATEBEARER/WOPRETMGI/01 (clause 7.6.3)
    - Use of dynamically established MBMS bearers in prearranged MCPTT group calls without pre-allocated TMGIs
  - EMBMS/PREBEARER/WPRETMGI/01 (clause 7.6.4)
    - Use of pre-established MBMS bearers in prearranged group calls with pre-allocated TMGIs
  - EMBMS/PREBEARER/WOPRETMGI/01 (clause 7.6.5)
    - Use of pre-established MBMS bearers in prearranged group calls without pre-allocated TMGIs
  - EMBMS/MODIFYBEARER/01 (clause 7.6.6)
    - Modification of MBMS bearers upon reception of emergency upgrade request
  - EMBMS/DEACTIVBEARER/WTMGIDEA/01 (clause 7.6.7)
    - Deactivation of MBMS bearers after termination of a prearranged MCPTT group call with TMGI deallocation
  - EMBMS/DEACTIVBEARER/WOTMGIDEA/01 (clause 7.6.8)
    - Deactivation of MBMS bearers after termination of a prearranged
    - MCPTT group call without TMGI deallocation
  - EMBMS/SWITCHTOUNITMGIEXP/01 (clause 7.6.9)
    - Switching to unicast bearer after TMGI expiration
- **Affiliations (AFFIL) (5 test cases):**
  - AFFIL/DET/01 (clause 7.7.1)
    - Determining self-affiliation (clauses 9.2.1.3 and 9.2.2.2.4 in ETSI TS 124 379 [9])
  - AFFIL/DET/02 (clause 7.7.2)
    - Determining affiliation status of another user (clauses 9.2.1.3 and 9.2.2.2.4 in ETSI TS 124 379 [9])

- AFFIL/CHANGE/01 (clause 7.7.3)
  - Affiliation status change triggered by the MCPTT User itself (clauses 9.2.1.2 and 9.2.2.2.3 in ETSI TS 124 379 [9])
- AFFIL/CHANGE/02 (clause 7.7.4)
  - Affiliation status change triggered by another MCPTT User in mandatory mode (clauses 9.2.1.2 and 9.2.2.3.3 in ETSI TS 124 379 [9])
- AFFIL/CHANGE/03 (clause 7.7.5)
  - Affiliation status change triggered by another MCPTT User in negotiated mode (clauses 9.2.1.4 and 9.2.1.5 in ETSI TS 124 379 [9])
- **Location (LOC) (3 test cases):**
  - LOC/3PRTYREG/CONFIG/01 (clause 7.8.1)
    - MCPTT Client Configuration upon 3<sup>rd</sup> party register (clauses 13.2.2 and 13.3.2 in ETSI TS 124 379 [9])
  - LOC/REQUEST/01 (clause 7.8.2)
    - Request for Location Report to the MCPTT Client (clauses 13.2.3 and 13.3.3 in ETSI TS 124 379 [9])
  - LOC/SUBMISSION/01 (clause 7.8.3)
    - MCPTT Client Sends location upon trigger (clause 13.3.4 in ETSI TS 124 379 [9])
- **OAM (CSC) (8 test cases):**
  - CSC-CMS/UECONF/UE/01 (clause 7.9.1)
    - Subscription and UE configuration document retrieval from the MC UE (clauses 6.3.3 and 6.3.13 - specifically clauses 6.3.13.2.2a and 6.3.13.3.2.3f in ETSI TS 124 484 [14]), OMA XDM mechanisms and procedures in IETF RFC 4825 [29])
  - CSC-CMS/UPROCONF/UE/01 (clause 7.9.2)
    - Subscription and user profile configuration document retrieval from the MC UE
  - CSC-CMS/SERVCONF/UE/01 (clause 7.9.3)
    - Subscription and service configuration document retrieval from the MC UE
  - CSC-CMS/SERVCONF/MCSSERV/01 (clause 7.9.4)
    - Subscription and service configuration document retrieval from the MCS server
  - CSC-GMS/GROUP/UE/01 (clause 7.9.5)
    - Subscription and group document retrieval from the MC UE
  - CSC-GMS/GROUP/MCSSERV/01 (clause 7.9.6)
    - Subscription and group document retrieval from the MCS Server
  - CSC/MULTIPLESUBS/GROUP/UE/01 (clause 7.9.7)
    - Subscription and retrieval of multiple documents from the CMS using subscription proxy
  - CSC/MULTIPLESUBSGMS/UE/01 (clause 7.9.8)
    - Subscription and retrieval of multiple documents from the GMS using subscription proxy

- **Security (SEC) (17 test cases):**

- SEC/KEYMDOWNLOAD/WPROXY/01 (clause 7.10.1)
  - Key material download from KMS to MCPTT client (CSC-8) with proxy
- SEC/KEYMDOWNLOAD/WPROXY/02 (clause 7.10.2)
  - Key material download from KMS to MCPTT server (CSC-9) with proxy
- SEC/KEYMDOWNLOAD/WPROXY/03 (clause 7.10.3)
  - Key material download from KMS to MCPTT GMS (CSC-10) with proxy
- SEC/KEYMDOWNLOAD/WOPROXY/01 (clause 7.10.4)
  - Key material download from KMS to MCPTT client (CSC-8) without proxy
- SEC/KEYMDOWNLOAD/WOPROXY/02 (clause 7.10.5)
  - Key material download from KMS to MCPTT server (CSC-9) without proxy
- SEC/KEYMDOWNLOAD/WOPROXY/03 (clause 7.10.6)
  - Key material download from KMS to MCPTT GMS (CSC-10) without proxy
- SEC/KEYDIST/CSK/01 (clause 7.10.7)
  - Key management from MC client to MC server (CSK upload)
- SEC/KEYDIST/GMK/01 (clause 7.10.8)
  - Key management for group communications (GMK)
- SEC/KEYDIST/MUSIK/01 (clause 7.10.9)
  - Key management from MC server to MC client (Key download MuSiK)
- SEC/ENCRYPTION/PRIVATE/01 (clause 7.10.10)
  - Encryption of MCPTT private calls (use of derived encryption keys from
  - PCK for the audio and CSK for floor control and RTCP reports)
- SEC/ENCRYPTION/GROUP/01 (clause 7.10.11)
  - Encryption of MCPTT group calls (use of derived encryption keys from GMK for the audio and CSK for floor control and RTCP reports)
- SEC/ENCRYPTION/GROUPEMBMS/01 (clause 7.10.12)
  - <D-w>
- SEC/XMLENCRYPT/PRIVATE/01 (clause 7.10.13)
  - XML contents encryption in MCPTT private calls (mcptt-info and resource-lists)
- SEC/XMLENCRYPT/GROUP/01 (clause 7.10.14)
  - XML contents encryption in MCPTT group calls (mcptt-info)
- SEC/XMLENCRYPT/AFFIL/01 (clause 7.10.15)
  - XML contents encryption in affiliation procedure
- SEC/XMLENCRYPT/LOC/01 (clause 7.10.16)
  - XML contents encryption in location procedure

- SEC/XMLENCRIPT/REGAUTH/01 (clause 7.10.17)
  - XML contents encryption in registration and authorization procedures
- **MCVideo Transmission Control (TC) (4 test cases):**
  - TC/BASIC/01 (clause 7.11.1)
    - Basic TC functionality
  - TC/BASIC/02 (clause 7.11.2)
    - Effect of maximum number of transmitters
  - TC/BASIC/03 (clause 7.11.3)
    - Effect of maximum number of receivers
  - TC/BASIC/04 (clause 7.11.4)
    - Basic TC functionality. Maximum number of transmitters and pre-emptive priority request
- **Server-to-Server communications (S2S) (2 test cases):**
  - S2S/ONN/GROUP/PREA/ONDEM/TEMP/01 (clause 7.12.1)
    - On-demand prearranged MCPTT Group Call to temporary group in trusted mode
  - S2S/ONN/GROUP/PREA/ONDEM/TEMP/02 (clause 7.12.2)
    - On-demand prearranged MCPTT Group Call to temporary group in untrusted mode
- **Functional Aliasing (FA) (8 test cases):**
  - FA/CHANGE/01 (clause 7.13.1)
    - MCPTT user requests to activate one or more functional aliases
  - FA/CHANGE/02 (clause 7.13.2)
    - MCPTT user requests to deactivate one or more functional aliases
  - FA/CHANGE/03 (clause 7.13.3)
    - MCPTT user refreshes the interest on one or more functional aliases
  - FA/CHANGE/04 (clause 7.13.4)
    - MCPTT user takes over a functional aliases
  - FA/LOCCHANGE/01 (clause 7.13.5)
    - MCPTT user requests to activate one or more functional aliases upon entering a location area
  - FA/LOCCHANGE/02 (clause 7.13.6)
    - MCPTT user requests to deactivate one or more functional aliases upon entering a location area
  - FA/DET/01 (clause 7.13.7)
    - MCPTT user determines the functional aliases successfully activated
  - FA/DET/02 (clause 7.13.8)
    - MCPTT user determines the functional aliases successfully activated for another user

- **Interoperability Testing (IOP) (7 test cases):**
  - IOP/01 (clause 7.14.1)
    - Effect of (de)affiliating another user during an ongoing group call
  - IOP/02 (clause 7.14.2)
    - GEOFENCING
  - IOP/03 (clause 7.14.3)
    - Complete group-regrouping procedure
  - IOP/04 (clause 7.14.4)
    - Effect of adding a user to a group and CSC subscriptions
  - IOP/05 (clause 7.14.5)
    - Missed call and private call callback
  - IOP/06 (clause 7.14.6)
    - EMBMS switch from unicast to multicast and back to unicast
  - IOP/07 (clause 7.14.7)
    - one-to-server video push & one-from-server video pull operation

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## 5 Configurations

### 5.1 Common remarks

The tests may be executed several times by permuting the role that each device plays. This depends on the support of the DUT of the Functional Connectivity Modes defined in clause 5.3.2 of ETSI TS 124 379 [9]. The following roles are possible:

- a) Functions of the MCPTT server in the primary MCPTT system.
- b) The non-controlling function operating in the primary MCPTT system.
- c) Mutual aid relationship between the primary MCPTT system and a partner MCPTT system with the controlling MCPTT function in the primary MCPTT system.
- d) Mutual aid relationship between the primary MCPTT system and a partner MCPTT system with the controlling MCPTT function in the partner MCPTT system.
- e) Mutual aid relationship between the primary MCPTT system and a partner MCPTT system involving the use of a non-controlling MCPTT function of an MCPTT group in the partner MCPTT system.
- f) Mutual aid relationship between the primary MCPTT system and more than one partner MCPTT system.



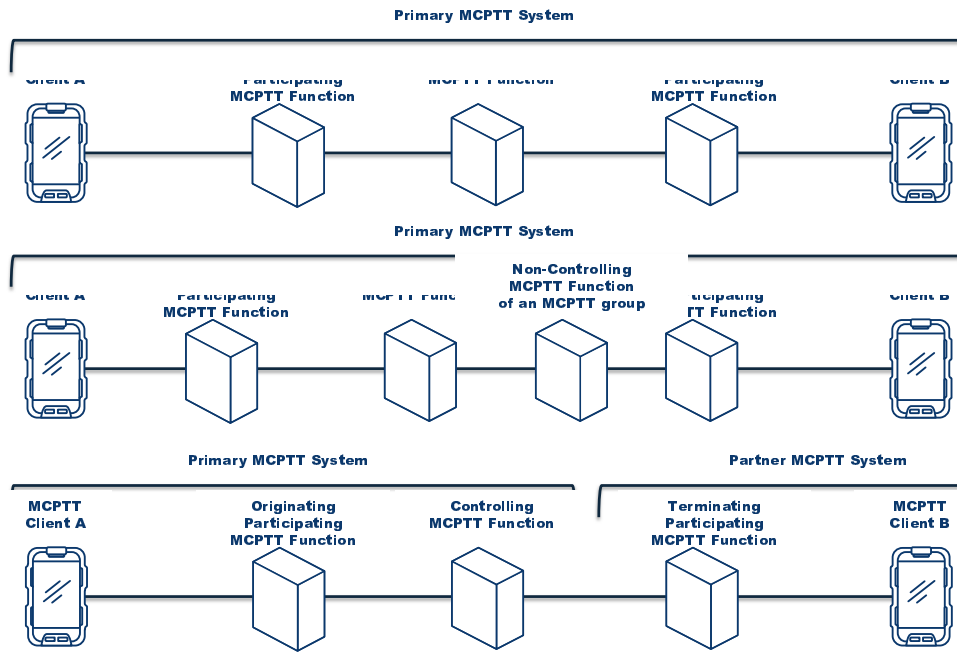


Figure 6: Functional connectivity modes (figures 5.3.2.1 to 5.3.2.3 of ETSI TS 124 379 [9])

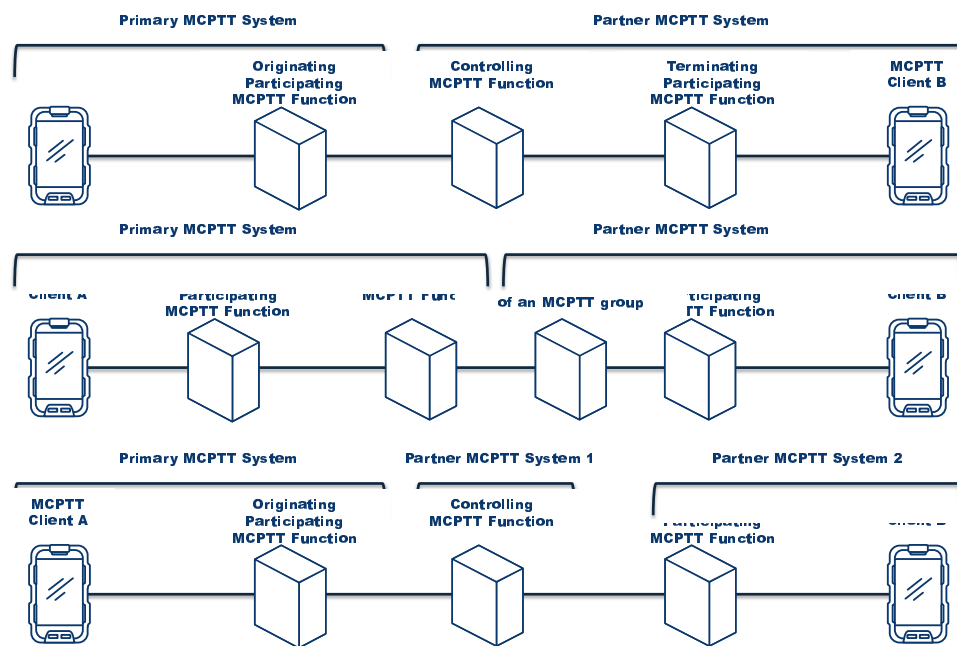
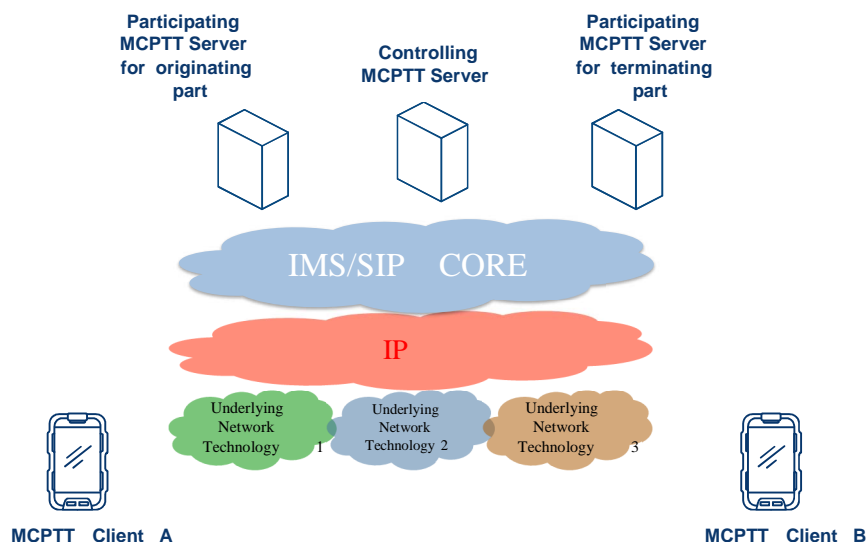


Figure 7: Functional connectivity modes (figures 5.3.2.4 to 5.3.2.6 of ETSI TS 124 379 [9])

## 5.2 CFG\_ONN\_OTT-1

CFG\_ONN\_OTT-1 is shown in figure 8.

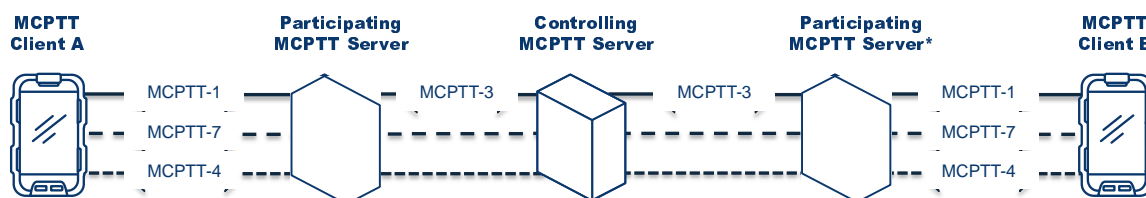


**Figure 8: CFG\_ONN\_OTT-1 Scheme**

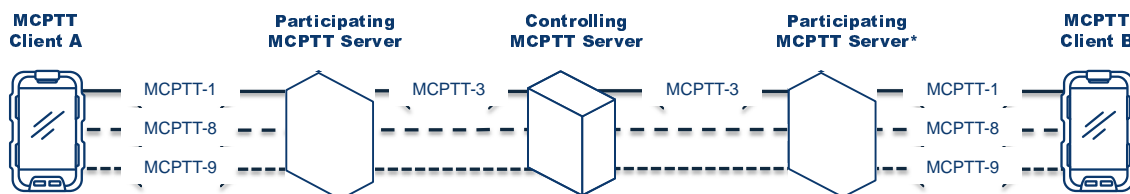
MCPTT (MCS in general) UEs, SIP Core/IMS and MCPTT Server(s) are required. It will be used for On Network Calls (ONN) with a pure Over-The-Top (OTT) approach. Therefore, any underlying network (i.e. commercial LTE or even UMTS, WiFi or Ethernet) will provide a bit-pipe type only access with no QoS/prioritization enforcement neither access-layer multi/broadcasting capabilities (i.e. nor unicast PCC support or multicast mechanisms in LTE). It can be also referred as a configuration comprised of "non-3GPP access connections" only.

This configuration, although not usable in a real Mission Critical (MC) environment (only by dispatchers as suggested in clause 4 in ETSI TS 122 179 [1]), will be used for basic connectivity tests and does not require any binding between the SIP Core and the underlying LTE infrastructure (no Rx interface, plain OTT as in figure 8).

Additionally, figure 9 defines the different Interfaces in the Application plane considered in the configuration CFG\_ONN\_OTT-1 for the simplest unicast media handling and floor controlling case.



**Figure 9: CFG\_ONN\_OTT-1 Interfaces for the unicast case**



**Figure 10: CFG\_ONN\_OTT-1 Interfaces for the multicast case**

Finally, figure 10 defines the different Interfaces in the Application plane considered in the configuration CFG\_ONN\_OTT-1 for the multicast media handling and floor controlling case.

### 5.3 CFG\_ONN\_UNI-MC-LTE-1

In this configuration LTE will have PCC capabilities and therefore will enforce QoS policies in terms of prioritization and pre-emptiveness in unicast bearers including new Public Safety QCI 65/69 (but still no Release 13 eMBMS capabilities). Therefore, a Rx interface will be exposed and related reference points and signalling mechanisms will be tested.

As depicted in figure 11 and defined in ETSI TS 123 379 [4], clauses 5.2.9.3 and 9.2.2.3.2-3 either the SIP Core or the MCPTT Server itself could signal the PCC mechanisms related to Unicast Bearer (MCPTT-5, Rx interface).

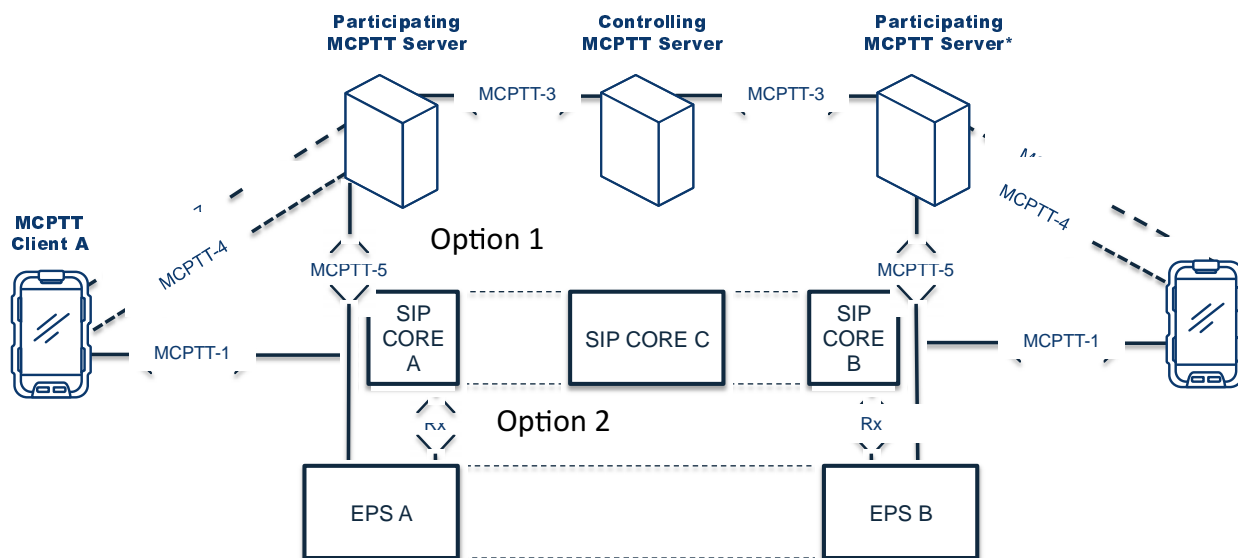


Figure 11: CFG\_ONN\_UNI-MC-LTE-1 Application plane interfaces

### 5.4 CFG\_ONN\_MULTI-MC-LTE-1

In this configuration LTE shall have full MCPTT supporting capabilities (i.e. Release 13 LTE-A Pro eMBMS + needed interfaces + needed MCPTT Release 14 related interfaces).

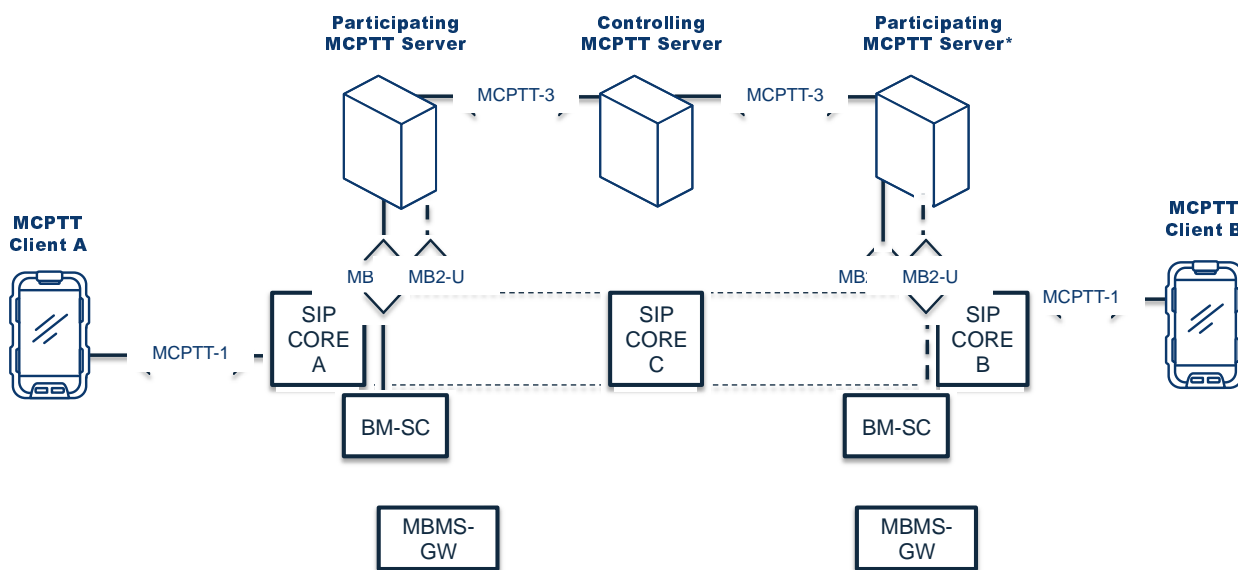


Figure 12: CFG\_ONN\_MULTI-MC-LTE-1 Application plane interfaces

## 6 Interoperable Functions Statement (IFS)

### 6.1 Entities

**Table 2: Entities**

Item	Which entity is supported?	Status	Support
1	UE		
2	MCPTT Client		
3	MCDATA Client		
4	MCVideo Client		
5	IMS		
6	MCPTT Participating AS		
7	MCPTT Controlling AS		
8	joint MCPTT Participating & Controlling AS		
9	MCDATA Participating AS		
10	MCDATA Controlling AS		
11	joint MCDATA Participating & Controlling AS		
12	MCVideo Participating AS		
13	MCVideo Controlling AS		
14	joint MCVideo Participating & Controlling AS		
15	BM-SC & MBMS-GW		
16	PCRF		
17	EPS		
18	CMS		
19	GMS		
20	KMS		
21	IDMS		

### 6.2 UE Features

**Table 3: UE features**

Item	Feature	ID	Ref	Status	Support
1	Does the UE support Mission Critical APNs and QCI?	UE_MC-APN	[4]		
2	Does the UE support EMBMS?	UE_EMBMS	[19]		

## 6.3 MCPTT Client Features

**Table 4: MCPTT Client features**

Item	Feature	ID	Ref	Status	Support
1	Does MCPTT-Client support Authentication and ID retrieval from IDMS?	MCPTT-Client_IDMS	[12]		
2	Does MCPTT-Client support PUBLISH Based Registration?	MCPTT-Client_PUBREG	[9]		
3	Does MCPTT-Client support REGISTER Based Registration?	MCPTT-Client_REGREG	[9]		
4	Does MCPTT-Client support On-Network MCPTT private and group calling?	MCPTT-Client_ONN-MCPTT-CALL	[9]		
5	Does MCPTT-Client support Release 14 specific MCPTT call types?	MCPTT-Client_ONN-MCPTT-Rel14	[9]		
6	Does MCPTT-Client support On-Network MCPTT floor controlling?	MCPTT-Client_ONN-MCPTT-FC	[10]		
7	Does MCPTT-Client support XML cyphering mechanisms?	MCPTT-Client_ONN-SEC-XML	[24]		
8	Does MCPTT-Client support media flows cyphering mechanisms?	MCPTT-Client_ONN-SEC-MEDIA	[24]		
9	Does MCPTT-Client support AMR-WB codec?	MCPTT-Client_AMR-WB	[18]		
10	Does MCPTT-Client support EVS codec?	MCPTT-Client_EVS	[18]		
11	Does MCPTT-Client support Configuration retrieval from CMS?	MCPTT-Client_CMS	[14]		
12	Does MCPTT-Client support Key retrieval from KMS?	MCPTT-Client_KMS	[24]		
13	Does MCPTT-Client support Mission Critical APNs and QCIs?	MCPTT-Client_MC-APN	[4]		
14	Does MCPTT-Client support EMBMS?	MCPTT-Client_EMBMS	[19]		
15	Does MCPTT-Client support Location configuration and submission?	MCPTT-Client_LOC	[9]		

## 6.4 MCDData Client Features

**Table 5: IMS features**

Item	Feature	ID	Ref	Status	Support
1	Does MCDData-Client support Authentication and ID retrieval from IDMS?	MCDData-Client_IDMS	[12]		
2	Does MCDData-Client support PUBLISH Based Registration?	MCDData-Client_PUBREG	[9]		
3	Does MCDData-Client support REGISTER Based Registration?	MCDData-Client_REGREG	[9]		
4	Does MCDData-Client support On-Network MCDData SDS over signalling plane?	MCDData-Client_ONN-MCDData-SDS-SP	[8]		
5	Does MCDData-Client support On-Network MCDData SDS over media plane?	MCDData-Client_ONN-MCDData-SDS-MP	[17]		
6	Does MCDData-Client support On-Network MCDData FD over signalling plane?	MCDData-Client_ONN-MCDData-FD-SP	[8]		
7	Does MCDData-Client support On-Network MCDData FD over media plane?	MCDData-Client_ONN-MCDData-FD-MP	[17]		
8	Does MCDData-Client support Configuration retrieval from CMS?	MCDData-Client_CMS	[14]		
9	Does MCDData-Client support Key retrieval from KMS?	MCDData-Client_KMS	[24]		
10	Does MCDData-Client support Mission Critical APNs and QCIs?	MCDData-Client_MC-APN	[4]		
11	Does MCDData-Client support EMBMS?	MCDData-Client_EMBMS	[19]		
12	Does MCDData-Client support Location configuration and submission?	MCDData-Client_LOC	[9]		

## 6.5 MCVideo Client Features

**Table 6: MCVideo Client features**

Item	Feature	ID	Ref	Status	Support
1	Does MCVideo-Client support Authentication and ID retrieval from IDMS?	MCVideo-Client_IDMS	[12]		
2	Does MCVideo-Client support PUBLISH Based Registration?	MCVideo-Client_PUBREG	[9]		
3	Does MCVideo-Client support REGISTER Based Registration?	MCVideo-Client_REGREG	[9]		
4	Does MCVideo-Client support On-Network MCVideo private and group calling?	MCVideo-Client_ONN-MCVideo-CALL	[7]		
5	Does MCVideo-Client support On-Network MCVideo transmission controlling?	MCVideo-Client_ONN-MCVideo-TC	[15]		
6	Does MCVideo-Client support H264 codec?	MCVideo-Client_H264	[18]		
7	Does MCVideo-Client support Configuration retrieval from CMS?	MCVideo-Client_CMS	[14]		
8	Does MCVideo-Client support Key retrieval from KMS?	MCVideo-Client_KMS	[24]		
9	Does MCVideo-Client support Mission Critical APNs and QCLs?	MCVideo-Client_MC-APN	[4]		
10	Does MCVideo-Client support EMBMS?	MCVideo-Client_EMBMS	[19]		
11	Does MCVideo-Client support Location configuration and submission?	MCVideo-Client_LOC	[9]		

## 6.6 IMS Features

**Table 7: IMS features**

Item	Feature	ID	Ref	Status	Support
1	Does the IMS support 3 <sup>rd</sup> Party REGISTER?	IMS_3RDPARTYREG	[9]		
2	Does the IMS support MCPTT compatible Rx Interface in the PCSCF?	IMS_RX	[21]		

## 6.7 MCPTT-Participating AS Features

**Table 8: MCPTT-Participating AS features**

Item	Feature	ID	Ref	Status	Support
1	Does the MCPTT-Part support REGISTER+PUBLISH Based Service Authorization?	MCPTT-Part_PUBAUTH	[9]		
2	Does the MCPTT-Part support REGISTER Based Authorization?	MCPTT-Part_REGAUTH	[9]		
3	Does the MCPTT-Part support On-Network MCPTT private and group calling?	MCPTT-Part_ONN-MCPTT-CALL	[9]		
4	Does the MCPTT-Part support Release 14 specific MCPTT call types?	MCPTT-Part_ONN-MCPTT-Rel14	[9]		
5	Does the MCPTT-Part support On-Network MCPTT floor controlling?	MCPTT-Part_ONN-MCPTT-FC	[10]		
6	Does the MCPTT-Part support XML cyphering mechanisms?	MCPTT-Part_ONN-SEC-XML	[24]		
7	Does the MCPTT-Part support media flows cyphering mechanisms?	MCPTT-Part_ONN-SEC-MEDIA	[24]		
8	Does the MCPTT-Part support Location?	MCPTT-Part_LOC	[9]		
9	Does the MCPTT-Part support Affiliation Procedures?	MCPTT-Part_AFFIL	[9]		
10	Does the MCPTT-Part support MCPTT compatible MCPTT-5 (Rx) Interface?	MCPTT-Part_RX	[21]		
11	Does the MCPTT-Part support MB2-C and MB2-U interfaces?	MCPTT-Part_GCSE	[23]		
12	Does the MCPTT-Part support Key retrieval from KMS?	MCPTT-Part_KMS	[24]		

## 6.8 MCPTT-Controlling AS Features

**Table 9: MCPTT-Controlling AS features**

Item	Feature	ID	Ref	Status	Support
1	Does the MCPTT-Ctrl support On-Network MCPTT private and group calling?	MCPTT-Ctrl_ONN-MCPTT-CALL	[9]		
2	Does the MCPTT-Ctrl support Release 14 specific MCPTT call types?	MCPTT-Ctrl_ONN-MCPTT-Rel14	[9]		
3	Does the MCPTT-Ctrl support On-Network MCPTT floor controlling?	MCPTT-Ctrl_ONN-MCPTT-FC	[10]		
4	Does the MCPTT-Ctrl support XML cyphering mechanisms?	MCPTT-Ctrl_ONN-SEC-XML	[24]		
5	Does the MCPTT-Ctrl support media flows cyphering mechanisms?	MCPTT-Ctrl_ONN-SEC-MEDIA	[24]		
6	Does the MCPTT-Ctrl support Location Configuration?	MCPTT-Ctrl_LOC	[9]		
7	Does the MCPTT-Ctrl support Group composition retrieval from GMS?	MCPTT-Ctrl_GMS	[11]		

## 6.9 MCDData-Participating AS Features

**Table 10: MCDData-Participating AS features**

Item	Feature	ID	Ref	Status	Support
1	Does the MCDData-Part support REGISTER+PUBLISH Based Service Authorization?	MCDData-Part_PUBAUTH	[9]		
2	Does the MCDData-Part support REGISTER Based Authorization?	MCDData-Part_REGAUTH	[9]		
3	Does the MCDData-Part support On-Network MCDData SDS over signalling plane?	MCDData-Part_ONN-MCDData-SDS-SP	[8]		
4	Does the MCDData-Part support On-Network MCDData SDS over media plane?	MCDData-Part_ONN-MCDData-SDS-MP	[17]		
5	Does the MCDData-Part support On-Network MCDData FD over signalling plane?	MCDData-Part_ONN-MCDData-FD-SP	[8]		
6	Does the MCDData-Part support On-Network MCDData FD over media plane?	MCDData-Part_ONN-MCDData-FD-MP	[17]		
7	Does the MCDData-Part support Location?	MCDData-Part_LOC	[9]		
8	Does the MCDData-Part support Affiliation Procedures?	MCDData-Part_AFFIL	[9]		
9	Does the MCDData-Part support MCDData compatible Rx Interface?	MCDData-Part_RX	[21]		
10	Does the MCDData-Part support MB2-C and MB2-U interfaces?	MCDData-Part_GCSE	[23]		

## 6.10 MCDData-Controlling AS Features

**Table 11: MCDData-Controlling AS features**

Item	Feature	ID	Ref	Status	Support
1	Does the MCDData-Ctrl support On-Network MCDData SDS over signalling plane?	MCDData-Ctrl_ONN-MCDData-SDS-SP	[8]		
2	Does the MCDData-Ctrl support On-Network MCDData SDS over media plane?	MCDData-Ctrl_ONN-MCDData-SDS-MP	[17]		
3	Does the MCDData-Ctrl support On-Network MCDData FD over signalling plane?	MCDData-Ctrl_ONN-MCDData-FD-SP	[8]		
4	Does the MCDData-Ctrl support On-Network MCDData FD over media plane?	MCDData-Ctrl_ONN-MCDData-FD-MP	[17]		
5	Does the MCDData-Ctrl support Location Configuration?	MCDData-Ctrl_LOC	[9]		
6	Does the MCDData-Ctrl support Group composition retrieval from GMS?	MCDData-Ctrl_GMS	[11]		



## 6.11 MCVideo-Participating AS Features

**Table 12: MCVideo-Participating AS features**

Item	Feature	ID	Ref	Status	Support
1	Does the MCVideo-Part support REGISTER+PUBLISH Based Service Authorization?	MCVideo-Part_PUBAUTH	[9]		
2	Does the MCVideo-Part support REGISTER Based Authorization?	MCVideo-Part_REGAUTH	[9]		
3	Does the MCVideo-Part support On-Network MCVideo private and group calling?	MCVideo-Part_ONN-MCVideo-CALL	[7]		
4	Does the MCVideo-Part support On-Network MCVideo transmission controlling?	MCVideo-Part_ONN-MCVideo-TC	[15]		
5	Does the MCVideo-Part support H264 codec?	MCVideo-Part_H264	[18]		
6	Does the MCVideo-Part support Location?	MCVideo-Part_LOC	[9]		
7	Does the MCVideo-Part support Affiliation Procedures?	MCVideo-Part_AFFIL	[9]		
8	Does the MCVideo-Part support MCVideo compatible MCVideo Rx Interface?	MCVideo-Part_RX	[21]		
9	Does the MCVideo-Part support MB2-C and MB2-U interfaces?	MCVideo-Part_GCSE	[23]		

## 6.12 MCVideo-Controlling AS Features

**Table 13: MCVideo-Controlling AS features**

Item	Feature	ID	Ref	Status	Support
1	Does the MCVideo-Ctrl support On-Network MCVideo private and group calling?	MCVideo-Ctrl_ONN-MCVideo-CALL	[7]		
2	Does the MCVideo-Ctrl support On-Network MCVideo transmission controlling?	MCVideo-Ctrl_ONN-MCVideo-TC	[15]		
3	Does the MCVideo-Ctrl support H264 codec?	MCVideo-Ctrl_H264	[18]		
4	Does the MCVideo-Ctrl support Location Configuration?	MCVideo-Ctrl_LOC	[9]		
5	Does the MCVideo-Ctrl support Group composition retrieval from GMS?	MCVideo-Ctrl_GMS	[11]		

## 6.13 BM-SC Features

**Table 14: BM-SC features**

Item	Feature	ID	Ref	Status	Support
1	Does the BM-SC support MB2-C and MB2-U interfaces?	BM-SC_GCSE	[23]		

## 6.14 EPS Features

**Table 15: EPS (LTE eUTRAN + EPC) features**

Item	Feature	ID	Ref	Status	Support
1	Does the EPS support Mission Critical APNs and QCLs?	EPS_MC-APN	[4]		
2	Does the EPS support Mission Critical compatible Gx interface with the PCRF?	EPS_GX	[20]		
3	Does the EPS support EMBMS capable EUTRAN+EPC?	EPS_EMBMS	[19]		

## 6.15 PCRF Features

**Table 16: PCRF features**

<b>Item</b>	<b>Feature</b>	<b>ID</b>	<b>Ref</b>	<b>Status</b>	<b>Support</b>
1	Does the PCRF support Mission Critical compatible Rx interface?	PCRF_RX	[21]		

---

## 7 Test Descriptions

### 7.1 Common Remarks

Initially the interactions with the support servers may be analysed in separated tests and not necessarily in every e2e call procedure.

Similarly, unless otherwise specified, no security mechanism should be applied (including interaction with KMS and ciphering of different parts of both signalling and media streams), and all users may be manually pre-configured at the different Functional Elements. Those users are considered as allowed to actually carry out the involved procedures.

During the tests every MCS Controlling server should take care of the group composition retrieval procedures in its own way.

Similarly, MCS-specific MCPTT Client authentication (particularly MCData and MCVideo), registration, and affiliation mechanisms may be considered as optional, so that the configuration allows MCPTT Participating and Controlling servers to consider agreed clients as registered, authenticated and also affiliated members of the groups considered in the tests.

Note that in all the sequence diagrams in the following clauses the flows between the MCPTT Functional Elements and the SIP/IMS Core are not shown unless explicitly specified. Therefore, some headers that should be included by SIP/IMS Core may not be mentioned in the sequence diagrams or messages (i.e. P-Asserted-Identity by P-CSCF).

In fact, both sequence diagrams and sample messages are provided for illustration purposes only. As a result, most of the headers (even MCPTT-ones) and some of the signalling messages have been removed. Normative references in clause 2.1 should be checked for details of all the procedures required.

### 7.2 Connectivity (CONN)

#### 7.2.1 MCPTT User initiates an on-demand prearranged MCPTT Group Call [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/01]

This test comprises the establishment of an on-demand prearranged Group Call. Initially, pure SIP signalling shall be evaluated (then, no floor control -NFC- mechanisms shall be specifically considered apart from the simplest case for verifying e2e communications).

**NOTE:** In this test case and following diagrams it is not considered triggering and possible effects of (un)successful implicit affiliation in the MCPTT participating server for the case when the calling is not affiliated to the group identified in the "SIP INVITE request for originating participating MCPTT function" as determined by clause 9.2.2.2.11 in ETSI TS 124 379 [9].

Similarly, unless specified no emergency or imminent peril conditions shall be signalled.

Message Sequence Diagram

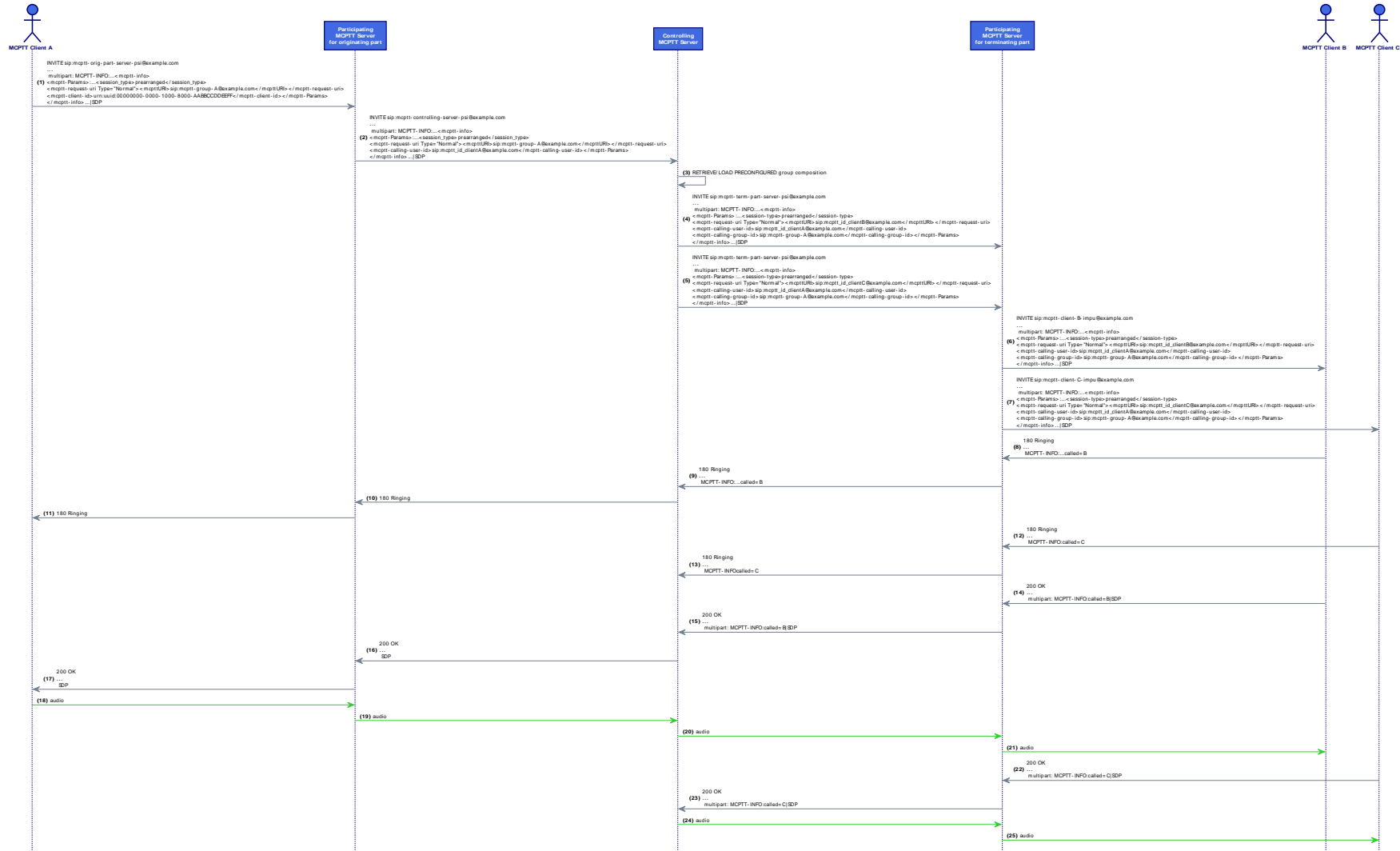


Figure 13: CONN-MCPTT/ONN/GROUP/PRA/ONDEM/NFC/01 Message Sequence

## Message Details

```

[1] INVITE MCPTT Caller/UE --> MCPTT Participating
INVITE sip:mcptt-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcptt-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn:3Aurn-7%3A3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt
Accept-Contact: *;+g.3gpp.mcptt/require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn:3Aurn-7%3A3gpp-service.ims.icsi.mcptt"; require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Preferred-Identity: <sip:mcptt-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]
--[boundary]
Content-Type: application/sdp
v=0
o=MCPTTCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP t=0 0
m=audio PORT RTP/AVP 105
a=label:1
i=speech
a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbour=0; max-red=0
aptime:20
a=maxptime:240
m=application 1234 udp MCPTT
a=fmtp:MCPTT mc_queing;mc_priority=5;mc_granted;mc_implicit_request ...
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="
  http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <session-type>prearranged</session-type>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
    </mcptt-request-uri>
    <mcptt-client-id type="Normal">
      <mcpttString>urn:uuid:00000000-0000-1000-8000-AABCCDDEEFF</mcpttString>
    </mcptt-client-id>
  </mcptt-Params>
</mcpttinfo>

--[boundary]
[2] INVITE MCPTT Participating --> MCPTT Controlling
INVITE sip:mcptt-controlling-server-psi@example.com SIP/2.0
To: <sip:mcptt-controlling-server-psi@example.com> ...
--[boundary]
Content-Type: application/sdp ...
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <session-type>prearranged</session-type>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
    </mcptt-request-uri>
    <mcptt-calling-user-id type="Normal">
      <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI> </mcptt-calling-user-id>
    </mcptt-Params>
</mcpttinfo>
--[boundary] ...
...
...

```

## Interoperability Test Description

Table 17: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN/ONN/GROUP/PREA/ONDEM/NFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)</li> <li>MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity - among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>Calling user is affiliated to the called group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls mcptt-group-A
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS
	3	check	INVITE received at the MCPTT controlling server
	4	check	The MCPTT controlling server loads the affiliated members of the mcptt-group-A (either preconfigured or retrieved from the GMS) and creates an INVITE per each of the "n" members
	5	check	"n" INVITES received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	6	check	"n" INVITES received at the affiliated mcptt_id_clientX
	7	check	"n" SIP dialogs established
	8	verify	Call connected and multiple media flows exchanged
<b>NOTE:</b>	It is not considered the triggering and possible effects of (un)successful implicit affiliation in the MCPTT participating server for the case when the calling is not affiliated to the group identified in the "SIP INVITE request for originating participating MCPTT function" as determined by clause 9.2.2.2.11 in ETSI TS 124 379 [9].		

## 7.2.2 MCPTT User initiates an on-demand prearranged MCPTT Group Call: Emergency Group Call [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/02]

The test is equivalent to CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/01 (clause 7.2.1) but the calling user indicates that this is an Emergency Group Call.

Clauses 6.2.8.1.1 to 6.2.8.1.8 and 6.2.8.1.13 to 6.2.8.1.17 in ETSI TS 124 379 [9] describe the mechanisms involved in an Emergency Group Call handling including additional headers and elements (i.e. <mcptt-Params> in the <mcptt-info> element in the application/vnd.3gpp.mcptt-info+xml MIME body).

Furthermore, Emergency Group Call requests and answers trigger changes to the emergency call state (i.e. from MEGC 2: emergency-call-requested to MEGC 3: emergency-call-granted) and the emergency alert state (i.e. MEA 3: emergency-alert-initiated), internal states of the MCPTT client (and also groups) that are not shown in the diagrams and messages below.

Message Sequence Diagram

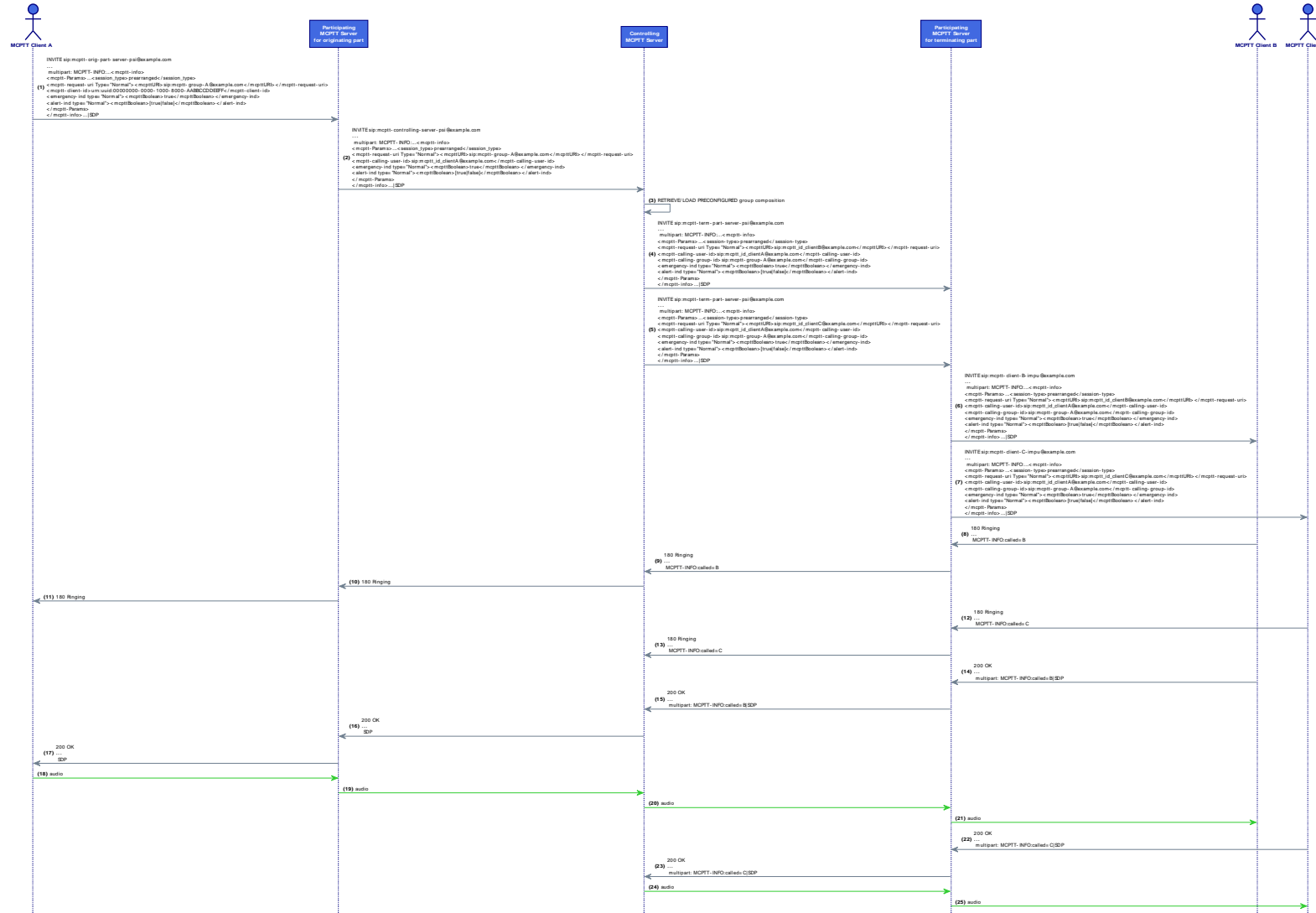


Figure 14: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/02 Message Sequence

## Message Details

```
[1] INVITE MCPTT Caller/UE --> MCPTT Participating

INVITE sip:mcptt-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcptt-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt
Accept-Contact: *;+g.3gpp.mcptt/require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.mcptt";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Preferred-Identity: <sip:mcptt-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]

--[boundary]
Content-Type: application/sdp

v=0
o=MCPTTCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP
t=0 0
m=audio PORT RTP/AVP 105
a=label:1
i=speech
a=rtptime:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20
a=maxptime:240
m=application 1234 udp MCPTT
a=fmtp:MCPTT mc_queuing;mc_priority=5;mc_granted;mc_implicit_request
...

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <session-type>prearranged</session-type>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
    </mcptt-request-uri>
    <mcptt-client-id type="Normal">
      <mcpttString>urn:uuid:00000000-0000-1000-8000-AABCCDDEEFF</mcpttString>
    </mcptt-client-id>
    <emergency-ind type="Normal">
      <mcpttBoolean>true</mcpttBoolean>
    </emergency-ind>
    <alert-ind type="Normal">
      <mcpttBoolean>[true|false]</mcpttBoolean>
    </alert-ind>
  </mcptt-Params>
</mcpttinfo>
--[boundary]

[2] INVITE MCPTT Participating --> MCPTT Controlling

INVITE sip:mcptt-controlling-server-psi@example.com SIP/2.0
To: <sip:mcptt-controlling-server-psi@example.com>
...

--[boundary]
Content-Type: application/sdp
...
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <session-type>prearranged</session-type>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
    </mcptt-request-uri>
```



```

<mcptt-calling-user-id type="Normal">
  <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>
</mcptt-calling-user-id>
<emergency-ind type="Normal">
  <mcpttBoolean>true</mcpttBoolean>
</emergency-ind>
<alert-ind type="Normal">
  <mcpttBoolean>[true|false]</mcpttBoolean>
</alert-ind>
</mcptt-Params>
</mcpttinfo>

--[boundary]
...
...
...

```

## Interoperability Test Description

Table 18: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/02 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN/ONN/GROUP/PREA/ONDEM/NFC/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a pre-arranged on demand emergency Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Calling user is affiliated to the called group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates an emergency Group Call to mcptt-group-A by setting the proper elements in the mcptt-info MIME body
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS
	3	check	INVITE received at the MCPTT controlling server
	4	check	The MCPTT controlling server loads the affiliated members of the mcptt-group-A (either preconfigured or retrieved from the GMS) and creates an INVITE per each of the "n" members
	5	check	"n" INVITES received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	6	check	"n" INVITES received at mcptt_id_clientX
	7	check	"n" SIP dialogs established
	8	verify	Call connected and multiple media flows exchanged
<b>NOTE:</b>	It is not considered the triggering and possible effects of (un)successful implicit affiliation in the MCPTT participating server for the case when the calling is not affiliated to the group identified in the "SIP INVITE request for originating participating MCPTT function" as determined by clause 9.2.2.2.11 in ETSI TS 124 379 [9].		

### 7.2.3 MCPTT User initiates an on-demand prearranged MCPTT Group Call: Imminent Peril Group Call [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/03]

The test is equivalent to CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/01 (clause 7.2.1) but the calling user indicates that this is an Imminent Peril Group Call.

Clauses 6.2.8.1.9 to 6.2.8.1.12 in ETSI TS 124 379 [9] indicate the mechanisms involved in an Imminent Peril Group Call. Initially, the MCPTT Client sets the <imminentperil-ind> element in the MIME mcptt-info body (within the mcptt-Params element) to "true". Furthermore, Imminent Peril Group Call requests and answers trigger changes to the imminent Peril Group Call state (i.e. from MIGC 2: imminent-peril-callrequested to MIGC 3:imminent-peril-call-granted).

Message Sequence Diagram

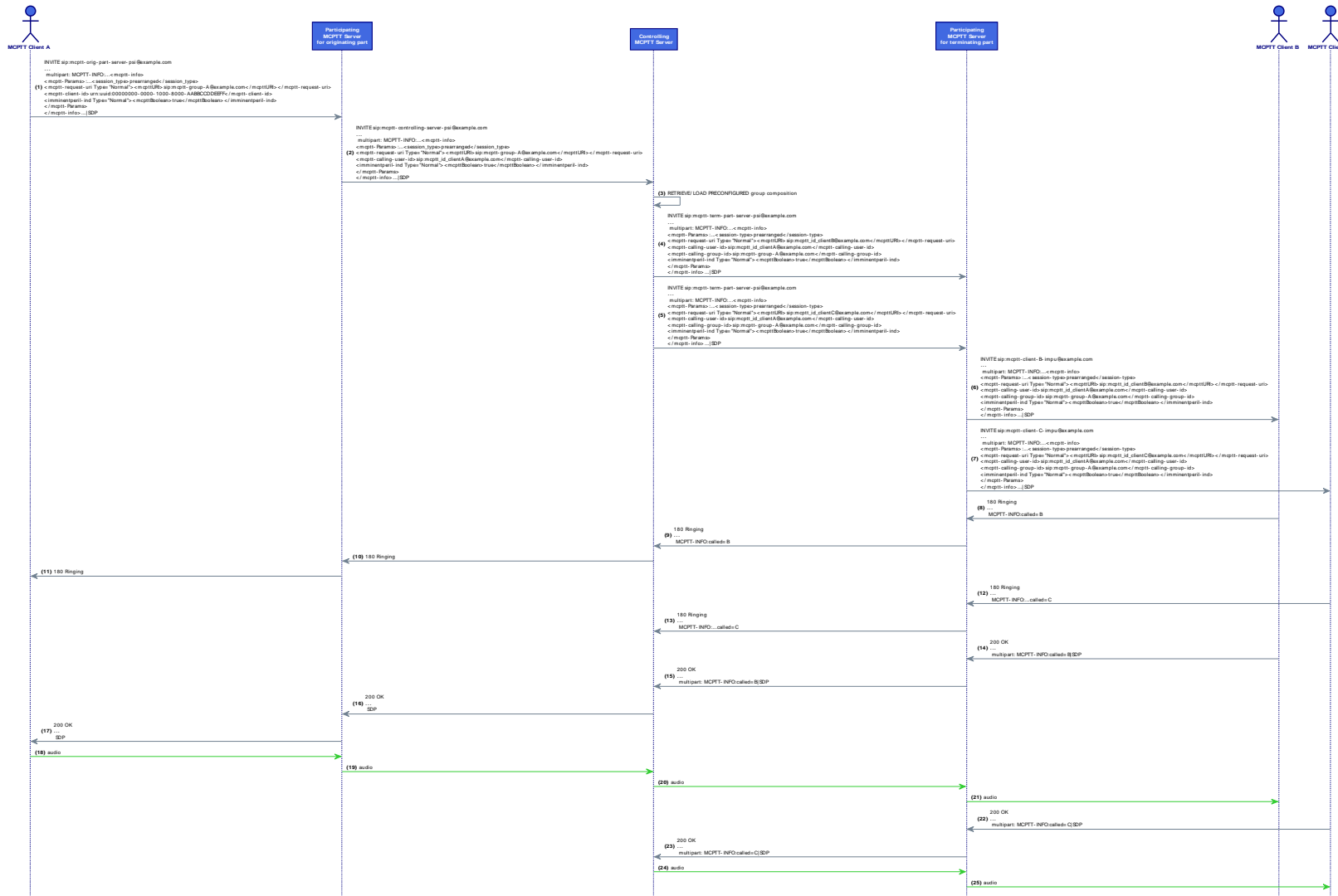


Figure 15: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/03 Message Sequence

## Message Details

```

INVITE sip:mcptt-server-orig-part-psi@example.com SIP/2.0 To: <sip:mcptt-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt
Accept-Contact: *;+g.3gpp.mcptt;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt"; require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Preferred-Identity: <sip:mcptt-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]
--[boundary]
Content-Type: application/sdp
v=0 o=MCPTTCLIENT 1183811731 4248272445 IN IP4 IP s=c=IN IP4 IP t=0 0 m=audio PORT RTP/AVP 105
a=label:1 i=speech a=rtpmap:105 AMR-WB/16000/1 a=fmtp:105 mode-change-period=1; mode-change-
capability=2; mode-change-neighbor=0; max-red=0 a=ptime:20 a=maxptime:240 m=application 1234 udp
MCPTT a=fmtp:MCPTT mc_queuing;mc_priority=5;mc_granted;mc_implicit_request ...
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-instance">
<mcptt-Params>
<session-type>prearranged</session-type>
<mcptt-request-uri type="Normal">
<mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
</mcptt-request-uri>
<mcptt-client-id type="Normal">
<mcpttString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcpttString>
</mcptt-client-id>
<imminentperil-ind Type="Normal">
<mcpttBoolean>>true</mcpttBoolean>
</imminentperil-ind>
</mcptt-Params>
</mcpttinfo>
--[boundary]
[2] INVITE MCPTT Participating --> MCPTT Controlling
INVITE sip:mcptt-controlling-server-psi@example.com SIP/2.0
To: <sip:mcptt-controlling-server-psi@example.com> ...
--[boundary]
Content-Type: application/sdp ...
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-instance">
<mcptt-Params>
<session-type>prearranged</session-type>
<mcptt-request-uri type="Normal">
<mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
</mcptt-request-uri>
<mcptt-calling-user-id type="Normal">
<mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>
</mcptt-calling-user-id>
<imminentperil-ind Type="Normal">
<mcpttBoolean>>true</mcpttBoolean>
</imminentperil-ind>
</mcptt-Params>
</mcpttinfo>
--[boundary] ...
...
...

```

## Interoperability Test Description

Table 19: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/03 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/03		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of an Imminent Peril pre-arranged on demand GroupCall		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>Calling user is affiliated to the called group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates an Imminent Peril Group Call to mcptt-group-A by setting the proper elements in the mcptt-info MIME body
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS
	3	check	INVITE received at the MCPTT controlling server
	4	check	The MCPTT controlling server loads the affiliated members of the mcptt-group-A (either preconfigured or retrieved from the GMS) and creates an INVITE per each of the "n" members
	5	check	"n" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	6	check	"n" INVITEs received at mcptt_id_clientX
	7	check	"n" SIP dialogs established
	8	verify	Call connected and multiple media flows exchanged

#### 7.2.4 MCPTT User initiates an on-demand prearranged MCPTT Group Call: Broadcast Group Call [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/04]

The test is equivalent to CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/01 (clause 7.2.1) but the calling user indicates that this is Broadcast Group Call.

Clause 6.2.8.2 in ETSI TS 124 379 [9] indicates the mechanisms involved in a Broadcast Group Call. Initially, the MCPTT Client sets the <broadcast-ind> element in the MIME mcptt-info body (within the mcpttParams element in the mcpttinfo XML) set to "true". The handling of the call is basically the same as other Group Call but only the call originating MCPTT user is allowed to transmit media and if the media transmission from call originating MCPTT user is complete, the broadcast Group Call is released (see clause 10.6.2.5 in ETSI TS 123 379 [4] for more details).

Message Sequence Diagram

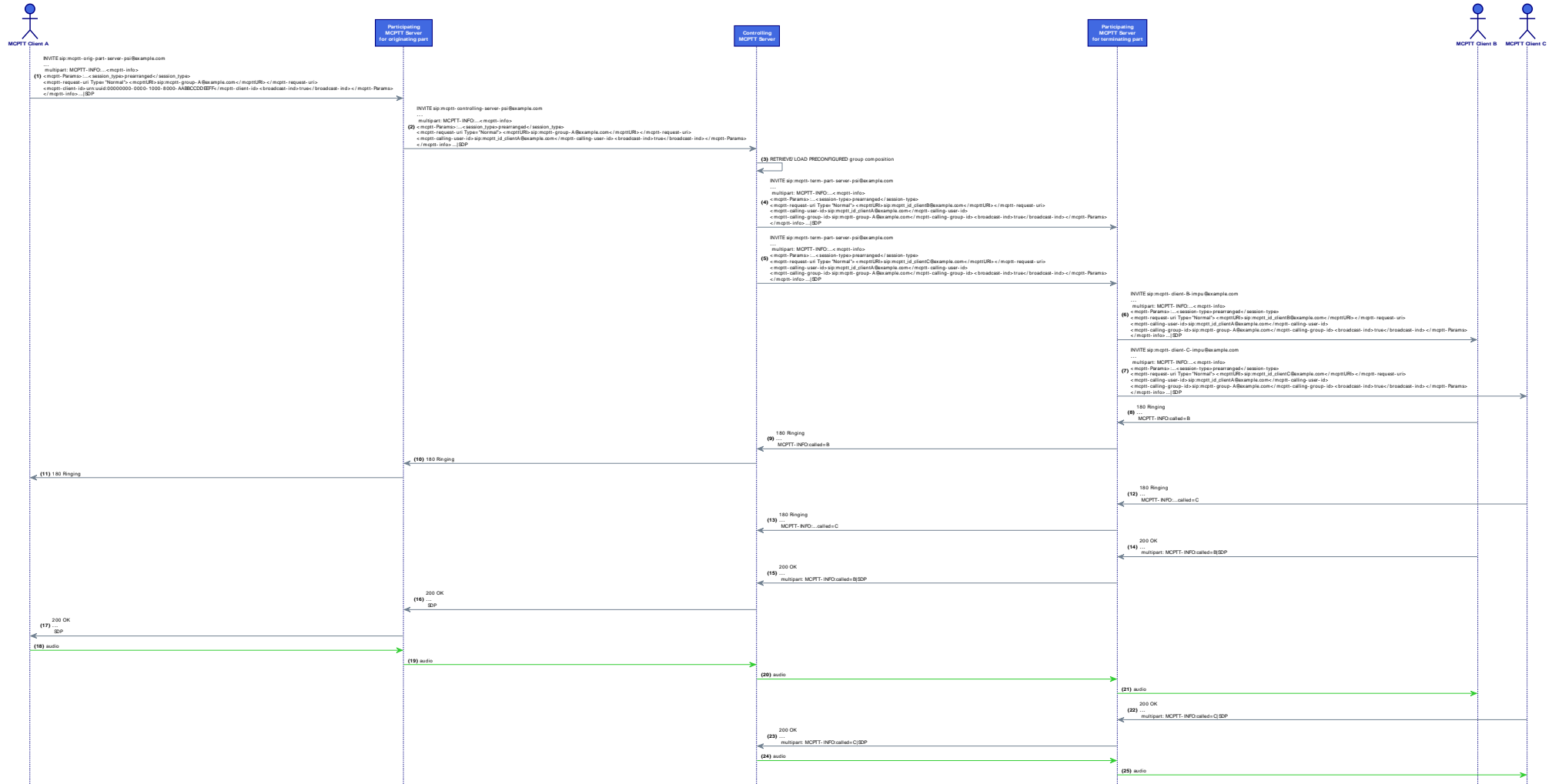


Figure 16: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/04 Message Sequence

## Message Details

```
[1] INVITE MCPTT Caller/UE --> MCPTT Participating

INVITE sip:mcptt-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcptt-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn:3Aurn-7%3A3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt
Accept-Contact: *;+g.3gpp.mcptt;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn:3Aurn-7%3A3gpp-service.ims.icsi.mcptt";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Preferred-Identity: <sip:mcptt-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]

--[boundary]
Content-Type: application/sdp

v=0
o=MCPTTCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP
t=0 0
m=audio PORT RTP/AVP 105
a=label:1
i=speech
a=rtptime:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20
a=maxptime:240
m=application 1234 udp MCPTT
a=fmtp:MCPTT mc_queing;mc_priority=5;mc_granted;mc_implicit_request
...
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <session-type>prearranged</session-type>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
    </mcptt-request-uri>
    <mcptt-client-id type="Normal">
      <mcpttString>urn:uid:00000000-0000-1000-8000-AABBCCDDEEFF</mcpttString>
    </mcptt-client-id>
    <broadcast-ind>true</broadcast-ind>
  </mcptt-Params>
</mcpttinfo>
--[boundary]

[2] INVITE MCPTT Participating --> MCPTT Controlling

INVITE sip:mcptt-controlling-server-psi@example.com SIP/2.0
To: <sip:mcptt-controlling-server-psi@example.com>
...

--[boundary]
Content-Type: application/sdp
...
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <session-type>prearranged</session-type>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
    </mcptt-request-uri>
    <mcptt-calling-user-id type="Normal">
      <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>
    </mcptt-calling-user-id>
    <broadcast-ind>true</broadcast-ind>
  </mcptt-Params>
</mcpttinfo>
```

--[boundary]  
 ...  
 ...  
 ...

## Interoperability Test Description

**Table 20: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/04 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN/ONN/GROUP/PREA/ONDEM/NFC/04		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a pre-arranged on demand Broadcast Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Calling user is affiliated to the called group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates a broadcast Group Call to mcptt-group-A by setting the proper elements in the mcptt-info MIME body
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS
	3	check	INVITE received at the MCPTT controlling server
	4	check	The MCPTT controlling server loads the affiliated members of the mcptt-group-A (either preconfigured or retrieved from the GMS) and creates an INVITE per each of the "n" members
	5	check	"n" INVITES received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	6	check	"n" INVITES received at mcptt_id_clientX
	7	check	"n" SIP dialogs established
	8	verify	Call connected and multiple media flows exchanged

### 7.2.5 MCPTT User initiates an on-demand prearranged MCPTT Group Call: Upgrade to in progress emergency or imminent peril [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/05]

This test covers the upgrade to either emergency or imminent peril Group Call during an in-progress Group Call as defined in CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/01 (clause 7.2.1).

There, the initial steps are totally equivalent but, upon a new risk or incident the MCPTT User triggers the emergency or imminent peril upgrade mechanism according to clauses 10.1.1.2.1.3 and 10.1.2.2.1.4 in ETSI TS 124 379 [9]). In both cases, a re-INVITE is triggered with the new <emergency-ind> or <imminentperil-ind> elements (see clauses 7.2.2 and 7.2.3 respectively for more info).



Message Sequence Diagram

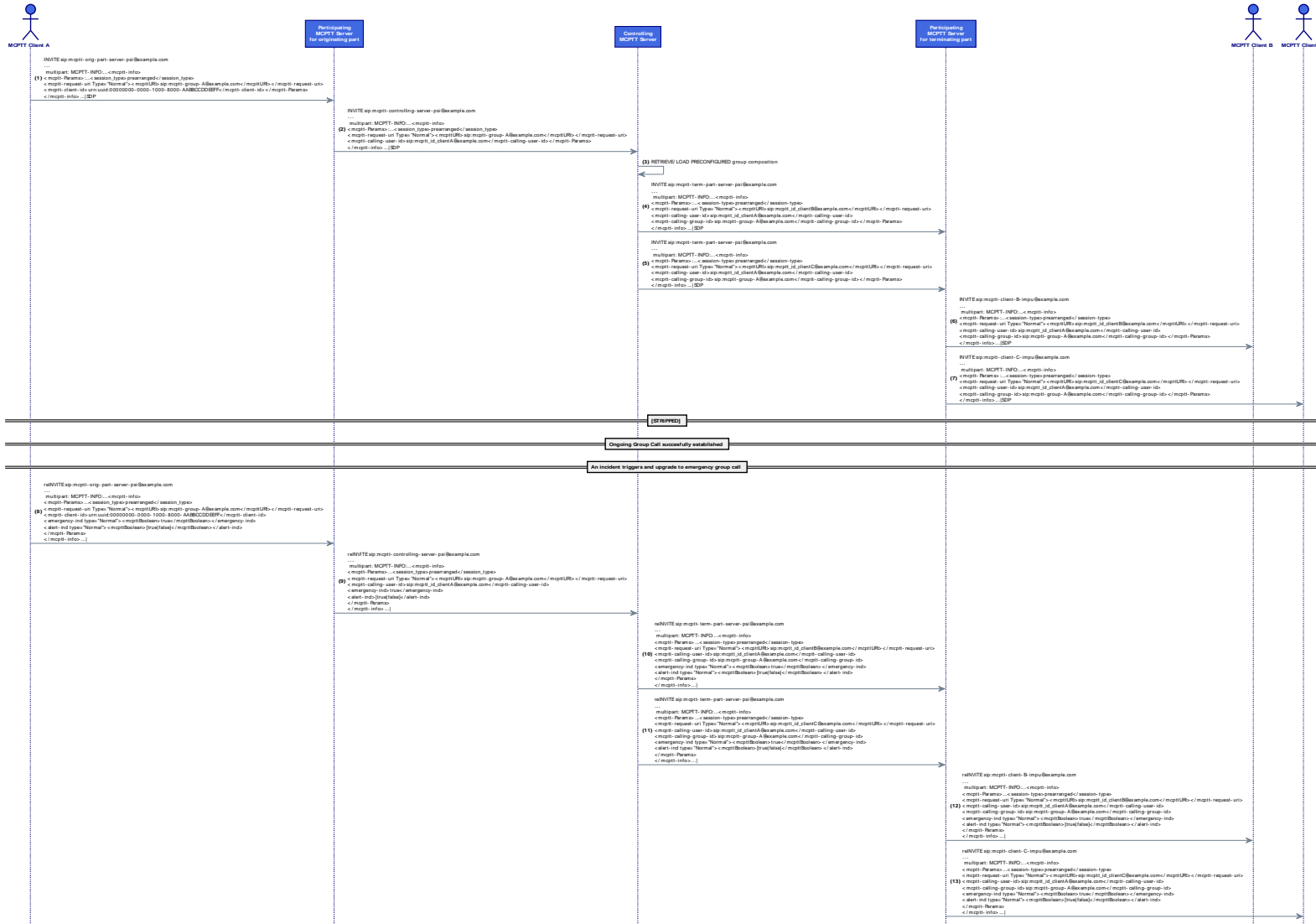


Figure 17: CONN-MCPTT/ONN/GROUP/PRA/ONDEM/NFC/05 Message Sequence

## Message Details

[8] re-INVITE MCPTT Caller/UE --> MCPTT Participating

[re]INVITE sip:mcptt-server-orig-part-psi@example.com SIP/2.0

To: <sip:mcptt-server-orig-part-psi@example.com>

Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt

Accept-Contact: \*;+g.3gpp.mcptt;require;explicit

Accept-Contact: \*;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt"; require;explicit

P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt

P-Preferred-Identity: <sip:mcptt-clientA@example.com>

Answer-Mode: Manual

Resource-Priority: mcpttp.5

Content-Type: multipart/mixed; boundary=[boundary]

--[boundary]

Content-Type: application/sdp

v=0 o=MCPTTCLIENT 1183811731 4248272445 IN IP4 IP s=c=IN IP4 IP t=0 0 m=audio  
 PORT RTP/AVP 105 a=label:1 i=speech a=rtptime:105 AMR-WB/16000/1 a=fmtp:105 mode-  
 change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0  
 a=ptime:20 a=maxptime:240 m=application 1234 udp MCPTT a=fmtp:MCPTT  
 mc\_queing;mc\_priority=5;mc\_granted;mc\_implicit\_request ...

--[boundary]

Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>

<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">

<mcptt-Params>

<session-type>prearranged</session-type>

<mcptt-request-uri type="Normal">

<mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>

</mcptt-request-uri>

<mcptt-client-id type="Normal"><mcpttString>urn:uuid:00000000-0000-1000-8000-  
 AABCCDDEEFF</mcpttString>

</mcptt-client-id>

<emergency-ind type="Normal">

<mcpttBoolean>>true</mcpttBoolean>

</emergency-ind>

<alert-ind type="Normal">

<mcpttBoolean>[true|false]</mcpttBoolean>

</alert-ind>

</mcptt-Params>

</mcpttinfo>

--[boundary]

[9] re-INVITE MCPTT Participating --> MCPTT Controlling

[re]INVITE sip:mcptt-controlling-server-psi@example.com SIP/2.0

To: <sip:mcptt-controlling-server-psi@example.com>

...

--[boundary]

Content-Type: application/sdp

...

--[boundary]

Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>

<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">

<mcptt-Params>

<session-type>prearranged</session-type>

<mcptt-request-uri type="Normal">

<mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>

</mcptt-request-uri>

<mcptt-calling-user-id type="Normal">

<mcpttURI>sip:mcptt\_id\_clientA@example.com</mcpttURI>

</mcptt-calling-user-id>

<emergency-ind type="Normal">

<mcpttBoolean>true</mcpttBoolean>

</emergency-ind>

<alert-ind type="Normal">

<mcpttBoolean>[true|false]</mcpttBoolean>

</alert-ind>

</mcptt-Params>

</mcpttinfo>

--[boundary]

...  
...  
...

## Interoperability Test Description

**Table 21: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/05 ITD**

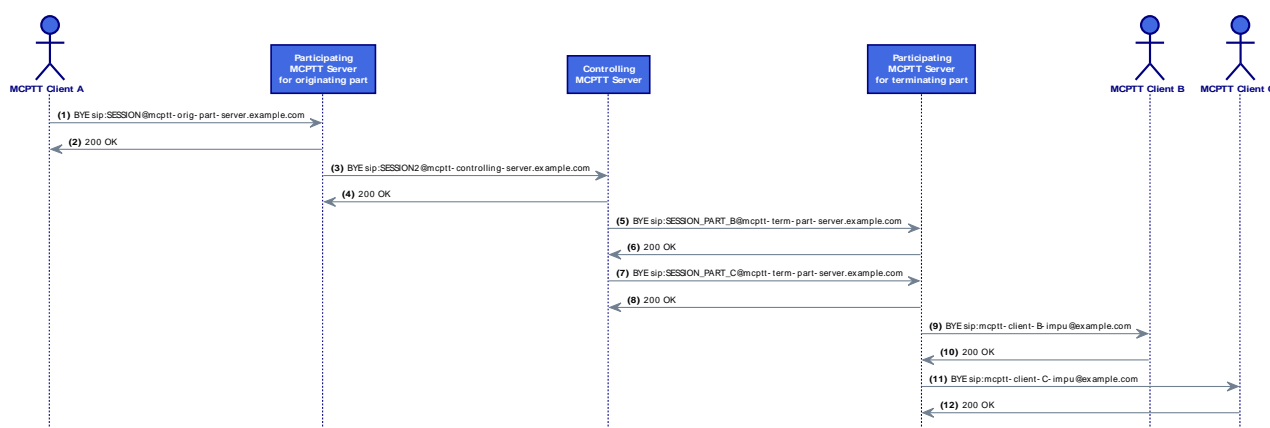
Interoperability Test Description			
<b>Identifier</b>	CONN/ONN/GROUP/PREA/ONDEM/NFC/05		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for a Group Call that is upgraded to Imminent Peril or Emergency		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Calling user is affiliated to the called group</li> <li>• Group Call properly established</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates a regular Group Call to mcptt-group-A
	2	check	The initial Group Call is properly established
	3	stimulus	Calling user upgrades the call to an Imminent Peril/Emergency one with a new INVITE with the proper elements in the mcptt-info
	4	check	reINVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS
	5	check	reINVITE received at the MCPTT controlling server
	6	check	"n" reINVITEs received at mcptt_id_clientX
	7	verify	New status of the Group Call agreed

### 7.2.6 MCPTT User initiates the termination of an on-demand prearranged MCPTT Group Call [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/06]

This test covers the termination by the Calling User of an in-progress prearranged MCPTT Group Call (clauses 10.1.1.2.3.1 and 10.1.1.3.3.1 in ETSI TS 124 379 [9]). It therefore comprises checking the correct termination of the Group Call by the classical BYE procedure in clause 6.2.4.1 in ETSI TS 124 379 [9].

In every BYE the MCPTT Session Identity to leave shall be set as Request-URI.

## Message Sequence Diagram



**Figure 18: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/06 Message Sequence**

## Message Details

[1] BYE Caller/UE --> MCPTT Participating

```
BYE sip:SESSION@mcptt-server-orig-part.example.com SIP/2.0
To: <sip:mcptt-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt
Accept-Contact: *;+g.3gpp.mcptt;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Preferred-Identity: <sip:mcptt-clientA@example.com>
CSeq: 2 BYE
Call-ID: XXXX@YYYYYYY
```

[2] 200 OK MCPTT Participating --> Caller/UE

```
BYE 200 OK SIP/2.0
To: <sip:mcptt-server-orig-part-psi@example.com>;tag=XXXX
CSeq: 2 BYE
Call-ID: XXXX@YYYYYYY
```

## Interoperability Test Description

Table 22: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/06 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN/ONN/GROUP/PREA/ONDEM/NFC/06		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling needed to terminate an ongoing Chat Group Call.		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Calling user is affiliated to the called group</li> <li>• Ongoing Group Call</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates an emergency Group Call to mcptt-group-A
	2	check	The initial Group Call is properly established
	3	stimulus	Calling user triggers the termination of the call by sending a BYE message
	4	verify	Group call properly terminated
<b>NOTE:</b>	In every BYE the MCPTT Session Identity to leave shall be set as Request-URI.		

### 7.2.7 MCPTT User initiates a prearranged MCPTT Group Call using pre-established session [CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/01]

This test is equivalent to the on-demand case (see clause 7.2.1) but using pre-established sessions.

Therefore, after a successful pre-establishment procedure by all users, the originating client initiates a prearranged Group Call by generating a REFER request as specified in IETF RFC 3515 [25] and updated by IETF RFC 6665 [34] and IETF RFC 7647 [35].

For simplicity purposes it is assumed that all the clients involved in the Group Call have already carried out the pre-establishment procedure. Hybrid situations could be also considered (i.e. mixing pre-established and on-demand terminating clients of the group) but the diagram illustrates the pre-established case only. For the pre-established sessions each participating function shall use floor control based signalling (MCPC) to notify the new session to originating and terminating Clients.

Message Sequence Diagram

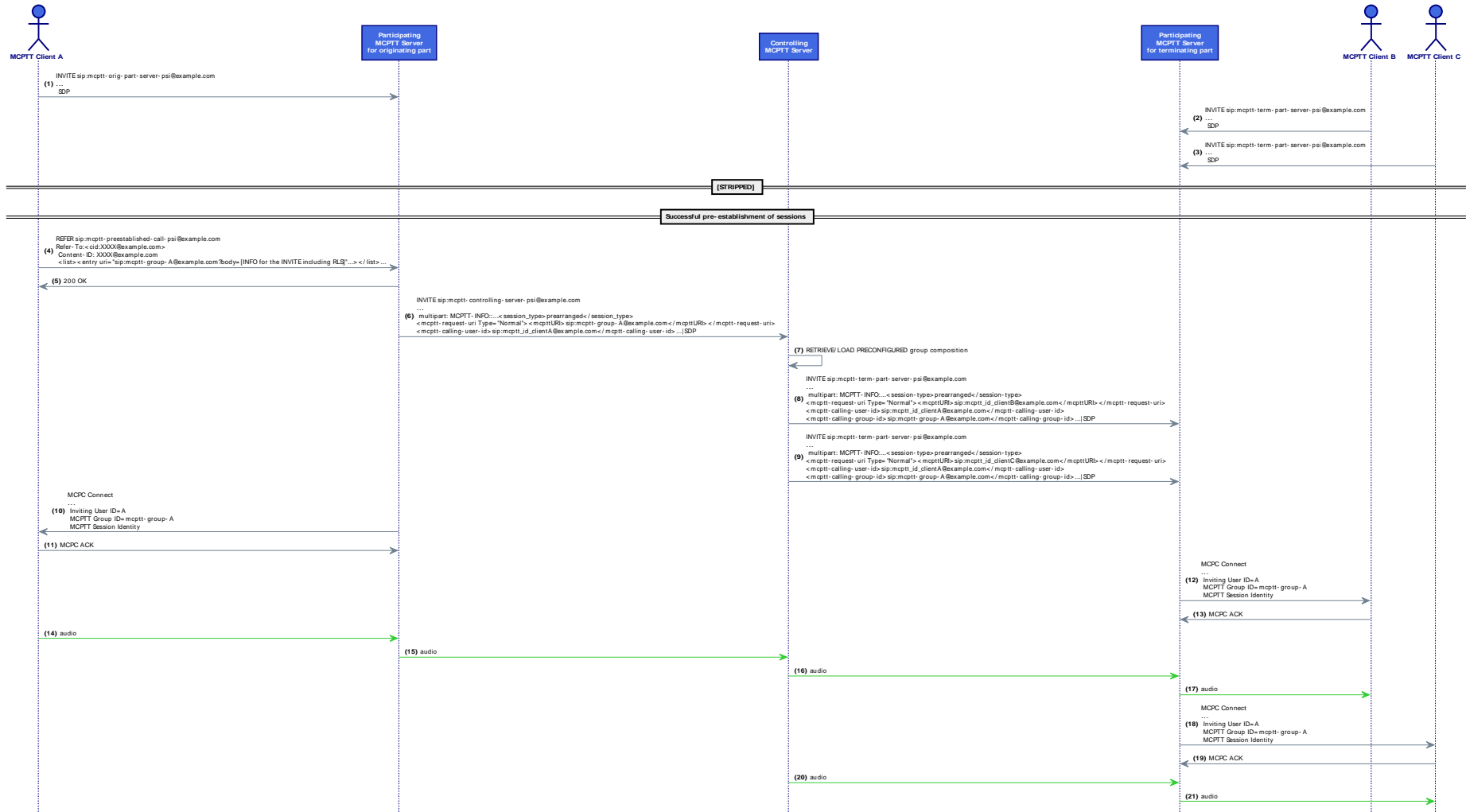


Figure 19: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/01 Message Sequence

## Message Details

[4] REFER MCPTT Caller/UE --> MCPTT Participating

REFER sip:mcptt-preestablished-session-psi@example.com SIP/2.0  
 From: <sip:mcptt-client-A@example.com>;tag=ABCD  
 To: <sip:mcptt-preestablished-session-psi@example.com>  
 Contact: <sip:mcptt-client-A@IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt  
 CSeq: 2 REFER  
 P-Asserted-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt  
 P-Asserted-Identity: <sip:mcptt-client-A@example.com>  
 Supported: norefersub  
 Refer-Sub: false  
 Require: multiple-refer  
 Target-Dialog: 1-26282@IP;local-tag=1;remote-tag=y1DK7rrj2ag0m  
 Content-Type: application/resource-lists+xml  
 Resource-Priority: mcpttp.5  
 Refer-To: <cid:g8QyvQSQ0rBgy7tg8gt45@example.com>  
 Content-ID: g8QyvQSQ0rBgy7tg8gt45@example.com

```
<?xml version="1.0" encoding="UTF-8" ?>
  <resource-lists
    xmlns="urn:ietf:params:xml:ns:resource-lists"
    xmlns:cc="urn:ietf:params:xml:ns:copycontrol">
    <list>
      <entry
        uri="sip:mcptt_id_clientB@example.com?body=--YKP42ALY6Zy3ey%0AContent-
Type%3A%20application%2Fvnd.3gpp.mcptt-
info%2Bxml%0A%0A%3C%3Fxml%20version%3D%221.0%22%20encoding%3D%22UTF-
8%22%3F%3E%0A%3Cmcpttinfo%20xmlns%3D%22urn%3A3gpp%3Ans%3A%3AmcpttInfo%3A1.0%22%20xmlns%3A%2F%2Fwww.w3.org%2F2001%2FXMLSchema-instance%22%3E%20%0A%20%20%3Cmcptt-
Params%3E%20%0A%20%20%20%3Csession-type%3Eprearranged%3C%2Fsession-
type%3E%0A%20%20%20%20....Content-Type%3A%20application%2Fsdp%0A%0Av%3D0%0Ao%3i...-YKP42ALY6Zy3ey-
&amp;Answer-Mode=Auto&amp;Content-Type=multipart%2Fmixed%3Bboundary%3DYKP42ALY6Zy3ey"
        cc:copyControl="to"/>
      </list>
    </resource-lists>
```

[9] MCPC MCPTT Participating --> MCPTT Callee/UE

Real-time Transport Control Protocol (Application specific)  
 Mission Critical Push-to-talk: Pre-established session call control  
 MCPTT Session Identity: sip:SESSION\_ID\_PART\_B@mcptt-server-orig-part.example.com:11060  
 Media Stream: 1  
 Control Channel: 2  
 Answer State: Unconfirmed (0)  
 Inviting MCPTT User Identity: sip:mcptt\_id\_clientA@example.com

## Interoperability Test Description

Table 23: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN/ONN/GROUP/PREA/PRE/NFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for a prearranged Group Call using pre-established session		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Calling user is affiliated to the called group</li> <li>• Pre-established sessions and prearranged Group Call already established</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	Calling user terminates the ongoing call by sending a REFER
	2	check	REFER received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS
	3	check	BYE received at the MCPTT controlling server
	4	check	"n" INVITEs received at the respective MCPTT participating servers
	5	check	"n" MCPC procedures to signal the new call to every mcptt_id_clientX
	6	verify	Group call established

## 7.2.8 MCPTT User initiates the termination of a prearranged MCPTT Group Call using pre-established session [CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/02]

This test is equivalent to the on-demand case (see clause 7.2.6) but using pre-established sessions.

Therefore, the Calling User of an on-going Group Call using a pre-established session sends an out-of-dialog REFER as described in clause 6.2.4.2 in ETSI TS 124 379 [9] including the "method" SIP URI parameter with the value "BYE" in the URI in the Refer-To header field.

After that initial REFER the Group Call terminating procedure follows the same mechanisms as in clause 7.2.6 till the terminating participating server. As defined in clause 6.3.2.2.8.2 in ETSI TS 124 379 [9] the participating MCPTT function shall then interact with the media plane resources towards the MCPTT client as specified in ETSI TS 124 380 [10] and maintain the pre-established session towards the MCPTT client.



## Message Sequence Diagram

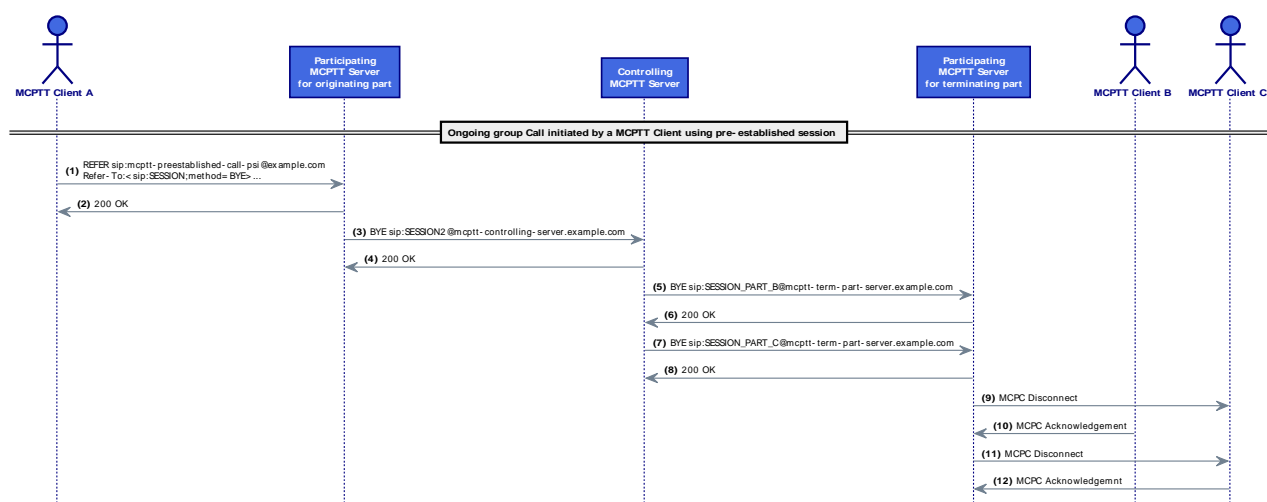


Figure 20: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/02 Message Sequence

## Message Details

[1] REFER MCPTT Caller/UE --> MCPTT Participating

```
REFER sip:mcptt-preestablished-session@example.com SIP/2.0
From: < sip:mcptt-client-B@example.com >;tag=EFGH
To: < sip:mcptt-preestablished-session@example.com >
Refer-To: < sip:SESSION;method=BYE >
Target-Dialog: sip:CID@example.com
```

[3] BYE MCPTT Participating --> MCPTT Controlling

```
BYE sip:SESSION_2@mcptt-server-controlling.example.com SIP/2.0
To: < sip:mcptt-server-orig-part-psi@example.com >
Contact: < sip:IP:PORT >;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt
Accept-Contact: *;+g.3gpp.mcptt;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Preferred-Identity: < sip:mcptt-clientA@example.com >
```

## Interoperability Test Description

Table 24: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/02 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN/ONN/GROUP/PREA/PRE/NFC/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling in order to terminate an ongoing prearranged Group Call using pre-established sessions.		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPTT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMSCalling user is affiliated to the called group</li> <li>• Ongoing pre-arranged Group Call with all members using pre-established sessions</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	Users initiates the termination of the ongoing prearranged Group Call
	2	check	Out-of-dialog REFER received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS
	3	check	BYE received at the MCPTT controlling server
	4	check	"n" BYEs with the proper Session Identities sent to all the respective MCPTT participating servers
	5	check	"n" MCPC Disconnect sent to all the users
	6	verify	Group call terminated

## 7.2.9 MCPTT User initiates an on-demand Chat Group Call [CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/01]

This test comprises an on-demand chat Group Call. As in clause 7.2.1 pure SIP signalling will be evaluated (then, no floor control -NFC- mechanisms will be specifically considered apart from the simplest case for verifying e2e communications).

Similarly, in this test case and following diagrams the triggering and possible effects of (un)successful implicit affiliation (in the MCPTT participating server for the case when the calling is not affiliated to the group identified in the "SIP INVITE request for originating participating MCPTT function") is not considered.

Furthermore, for simplicity purposes no emergency/imminent peril condition shall be signalled either by the initial INVITE or the subsequent ones (one per user joining). Therefore most of the associated clauses indicated in the clauses 10.1.2.2.1.1, 10.1.2.3.1.1, 10.1.2.3.1.3 and 10.1.2.4.1.1 in ETSI TS 124 379 [9] shall not take effect. The status of the ongoing chat Group Call shall therefore be always no emergency/imminent peril status. As a result, the MCPTT controlling shall NOT send INVITE requests to the affiliated but not joined members of the chat MCPTT group neither re-INVITE to the affiliated and joined ones.

The effect of (un)successful implicit affiliation, limitation on maximum number of users or ongoing sessions is not considered.

## Message Sequence Diagram

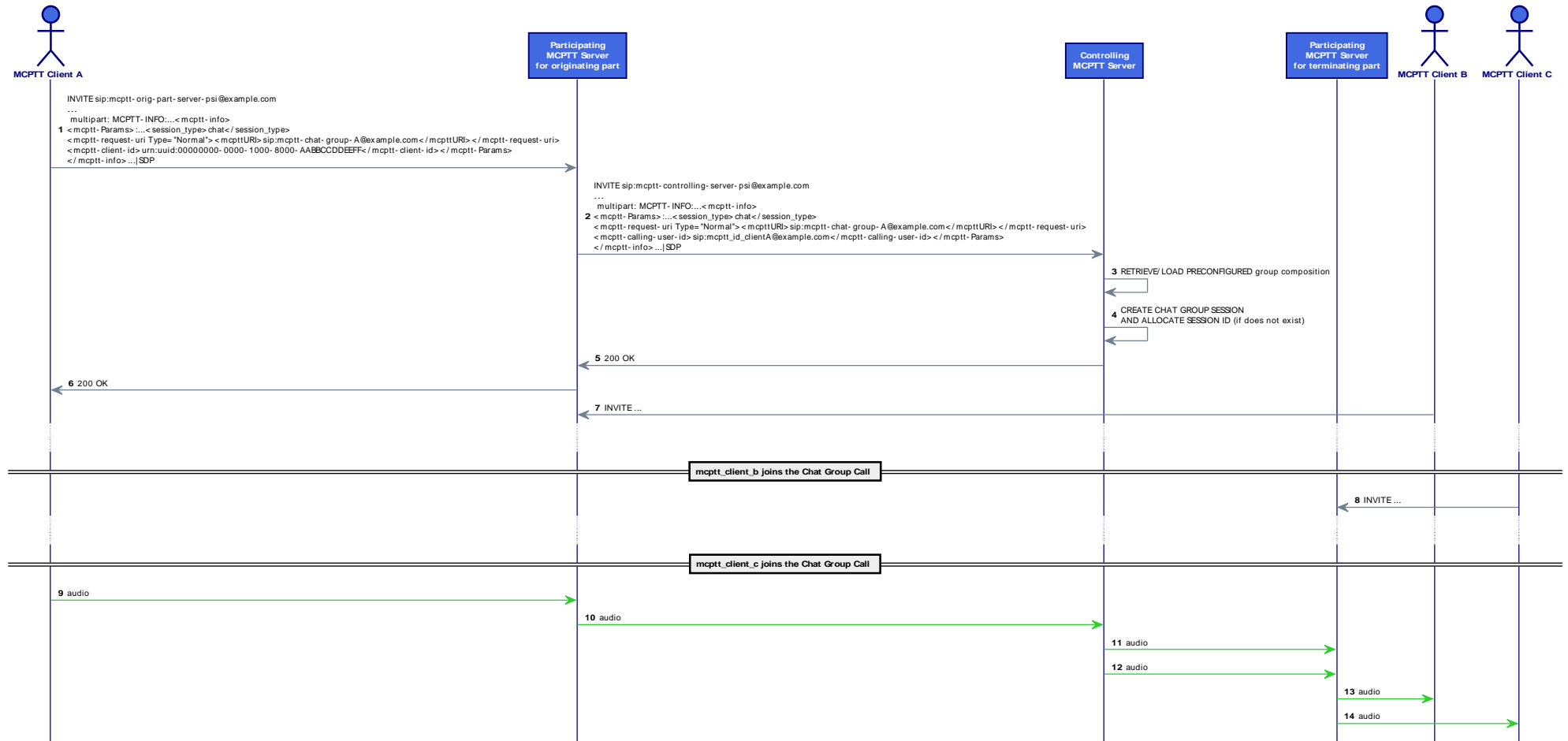


Figure 21: CONN-MCPTT/ONNGROUP/CHAT/ONDEM/NFC/01 Message Sequence

## Message Details

```
[1] INVITE MCPTT Caller/UE --> MCPTT Participating

INVITE sip:mcptt-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcptt-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt
Accept-Contact: *;+g.3gpp.mcptt/require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.mcptt";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Preferred-Identity: <sip:mcptt-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]

--[boundary]
Content-Type: application/sdp

v=0
o=MCPTTCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP
t=0 0
m=audio PORT RTP/AVP 105
a=label:1
i=speech
a=rtptime:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20
a=maxptime:240
m=application 1234 udp MCPTT
a=fmtp:MCPTT mc_queing;mc_priority=5;mc_granted;mc_implicit_request
...
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <session-type>prearranged</session-type>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
    </mcptt-request-uri>
    <mcptt-client-id type="Normal">
      <mcpttString>urn:uid:00000000-0000-1000-8000-AABBCCDDEEFF</mcpttString>
    </mcptt-client-id>
  </mcptt-Params>
</mcpttinfo>
--[boundary]

[2] INVITE MCPTT Participating --> MCPTT Controlling

INVITE sip:mcptt-controlling-server-psi@example.com SIP/2.0
To: <sip:mcptt-controlling-server-psi@example.com>
...

--[boundary]
Content-Type: application/sdp
...
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <session-type>prearranged</session-type>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
    </mcptt-request-uri>
    <mcptt-calling-user-id type="Normal">
      <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>
    </mcptt-calling-user-id>
  </mcptt-Params>
</mcpttinfo>

--[boundary]
```

...  
...  
...

## Interoperability Test Description

**Table 25: CONN-MCPTT/ONNGROUP/CHAT/ONDEM/NFC/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN/GROUP/CHAT/ONDEM/NFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of an on-demand Chat Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system and users properly affiliated to the called chat group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls mcptt-chat-group-A
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS
	3	check	INVITE received at the MCPTT controlling server
	4	check	The MCPTT controlling server loads the affiliated members of the mcptt-chat-group-A (either preconfigured or retrieved from the GMS), creates the session and returns a 200 OK to the callee. Upon no specific emergency/imminent peril indicator no (re)INVITE will sent to the other joined/not-joined affiliated members
	5	check	Users 2 and 3 repeat the same procedure
	6	verify	Call connected and multiple media flows exchanged

### 7.2.10 MCPTT User upgrades an ongoing on-demand Chat Group Call to emergency call [CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/02]

This test covers the upgrade to emergency chat Group Call during an in-progress chat Group Call as defined in CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/01 (clause 7.2.9).

There, the initial steps are totally equivalent but, upon a new risk or incident the MCPTT User triggers the emergency upgrade mechanism according to clauses 10.1.2.2.1.4, 10.1.2.2.1.2, 10.1.2.3.1.2, 10.1.2.3.1.4 and 10.1.2.4.1.2 in ETSI TS 124 379 [9].

A re-INVITE is triggered with the <emergency-ind> element (see clause 7.2.2 for more info) but with the proper <session-type> chat element.

The re-INVITE will be sent from the controlling function to all affiliated and joined members. Additionally in case there are affiliated but not joined members of the group, the controlling function shall send a new INVITE to them so that they are requested to join the group.

## Message Sequence Diagram

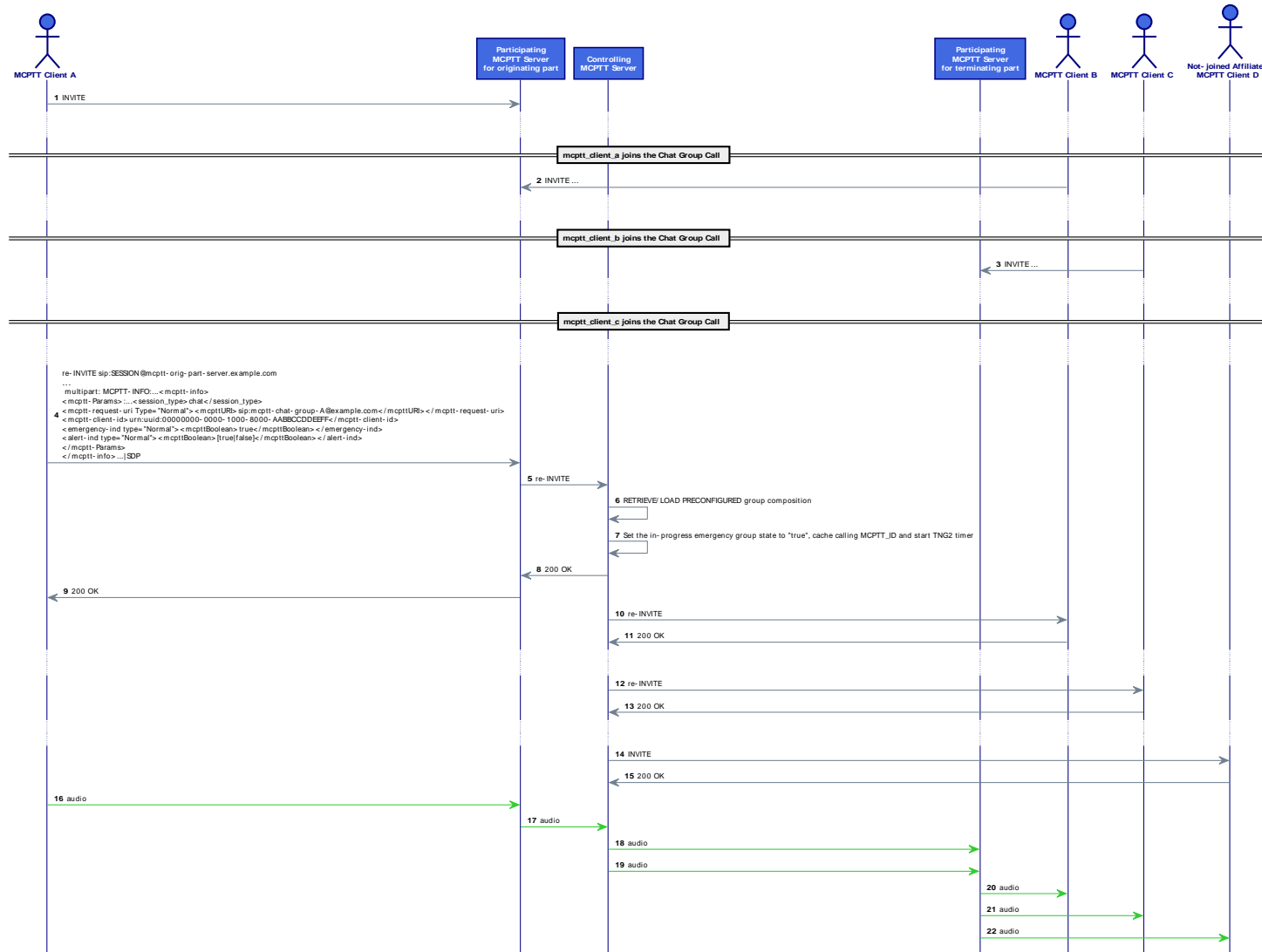


Figure 22: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/02 Message Sequence

## Message Details

```
[1] INVITE MCPTT Caller/UE --> MCPTT Participating

INVITE sip:mcptt-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcptt-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt
Accept-Contact: *;+g.3gpp.mcptt;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.mcptt";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Preferred-Identity: <sip:mcptt-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]

--[boundary]
Content-Type: application/sdp

v=0
o=MCPTTCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP
t=0 0
m=audio PORT RTP/AVP 105
a=label:1
i=speech
a=rtptime:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20
a=maxptime:240
m=application 1234 udp MCPTT
a=fmtp:MCPTT mc_queing;mc_priority=5;mc_granted;mc_implicit_request
...

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <session-type>prearranged</session-type>
    <mcptt-request-uri type="Normal">
      <mcpttString>sip:mcptt-group-A@example.com</mcpttString>
    </mcptt-request-uri>
    <mcptt-client-id type="Normal">
      <mcpttURI>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcpttURI>
    </mcptt-client-id>
    <emergency-ind type="Normal">
      <mcpttBoolean>true</mcpttBoolean>
    </emergency-ind>
    <alert-ind type="Normal">
      <mcpttBoolean>[true|false]</mcpttBoolean>
    </alert-ind>
  </mcptt-Params>
</mcpttinfo>
--[boundary]

[2] INVITE MCPTT Participating --> MCPTT Controlling

INVITE sip:mcptt-controlling-server-psi@example.com SIP/2.0
To: <sip:mcptt-controlling-server-psi@example.com>
...

--[boundary]
Content-Type: application/sdp
...
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <session-type>prearranged</session-type>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
    </mcptt-request-uri>
```

```

<mcptt-calling-user-id type="Normal">
  <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>
</mcptt-calling-user-id>
<emergency-ind type="Normal">
  <mcpttBoolean>true</mcpttBoolean>
</emergency-ind>
<alert-ind type="Normal">
  <mcpttBoolean>[true|false]</mcpttBoolean>
</alert-ind>
</mcptt-Params>
</mcpttinfo>

--[boundary]
...
...
...

```

## Interoperability Test Description

**Table 26: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN/GROUP/CHAT/ONDEM/NFC/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of the upgrade of an on-demand chat Group Call to emergency Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system and users properly affiliated to the called chat group</li> <li>• Ongoing on-demand chat Group Call where Clients A, B and C have joined (as in clause 7.2.9) while D has not</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) sends a re-INVITE to notify an emergency condition
	2	check	re-INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS
	3	check	re-INVITE received at the MCPTT controlling server
	4	check	The MCPTT controlling server loads the affiliated members of the mcptt-chat-group-A (either preconfigured or retrieved from the GMS) and, upon emergency indicator, sends re-INVITE to joined users (B and C) and a new INVITE to D
	5	verify	Call still connected and emergency state set in all elements



## 7.2.11 MCPTT User upgrades an ongoing on-demand Chat Group Call to imminent-peril call [CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/03]

This test covers the upgrade to imminent-peril chat Group Call during an in-progress chat Group Call as defined in CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/01 (clause 7.2.9).

There, the initial steps are also equivalent to clause 7.2.10 but, upon a new risk or incident the MCPTT User triggers the imminent-peril upgrade mechanism according to clauses 10.1.2.2.1.4, 10.1.2.2.1.2, 10.1.2.3.1.2, 10.1.2.3.1.4 and 10.1.2.4.1.3 in ETSI TS 124 379 [9].

A re-INVITE is triggered with the <imminentperil-ind> element (see clause 7.2.3 for more info) with the proper <session-type> chat element. The controlling function shall update the group state according to the new condition. Later, the re-INVITE shall be sent from the controlling function to all joined affiliated members.

Additionally, in case there are affiliated but not joined members of the group, the controlling function shall send a new INVITE to them so that they are requested to join the group.

## Message Sequence Diagram

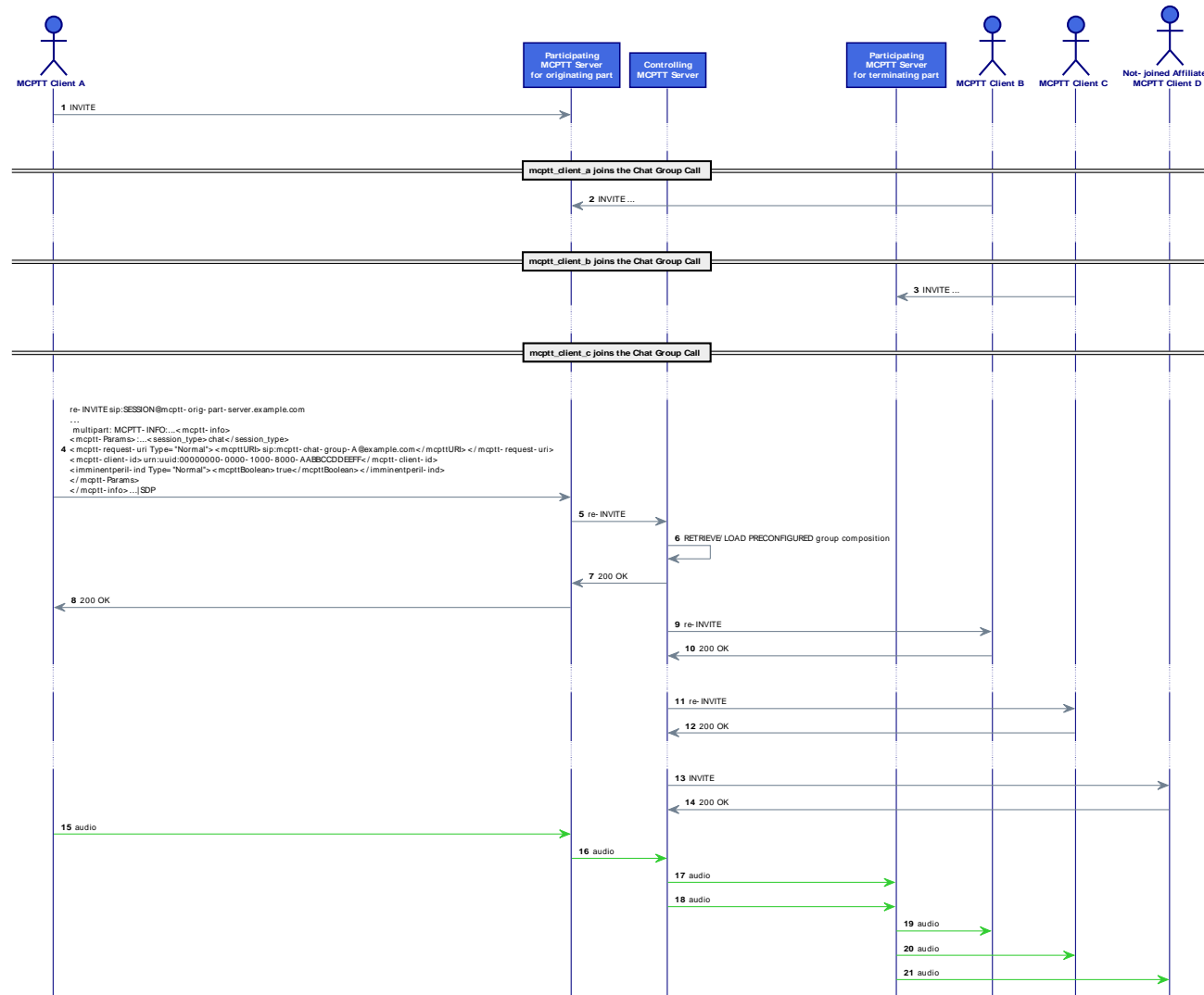


Figure 23: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/03 Message Sequence

## Message Details

```
[1] INVITE MCPTT Caller/UE --> MCPTT Participating

INVITE sip:mcptt-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcptt-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt
Accept-Contact: *;+g.3gpp.mcptt/require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.mcptt";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Preferred-Identity: <sip:mcptt-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]

--[boundary]
Content-Type: application/sdp

v=0
o=MCPTTCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP
t=0 0
m=audio PORT RTP/AVP 105
a=label:1
i=speech
a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20
a=maxptime:240
m=application 1234 udp MCPTT
a=fmtp:MCPTT mc_queing;mc_priority=5;mc_granted;mc_implicit_request
...

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <session-type>prearranged</session-type>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
    </mcptt-request-uri>
    <mcptt-client-id type="Normal">
      <mcpttURI>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcpttURI>
    </mcptt-client-id>
    <imminentperil-ind>true</imminentperil-ind>
  </mcptt-Params>
</mcpttinfo>
--[boundary]

[2] INVITE MCPTT Participating --> MCPTT Controlling

INVITE sip:mcptt-controlling-server-psi@example.com SIP/2.0
To: <sip:mcptt-controlling-server-psi@example.com>
...

--[boundary]
Content-Type: application/sdp
...
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <session-type>prearranged</session-type>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
    </mcptt-request-uri>
    <mcptt-calling-user-id type="Normal">
      <mcpttString>sip:mcptt_id_clientA@example.com</mcpttString>
    </mcptt-calling-user-id>

    <imminentperil-ind Type="Normal">
```

```

<mcpttBoolean>true</mcpttBoolean>
</imminentperil-ind>
  </mcptt-Params>
</mcpttinfo>

```

```

--[boundary]
...
...
...

```

## Interoperability Test Description

**Table 27: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/03 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN/GROUP/CHAT/ONDEM/NFC/03		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of the upgrade of an on-demand chat Group Call to imminent-peril		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system and users properly affiliated to the called chat group</li> <li>• Ongoing on-demand chat Group Call where Clients A, B and C have joined (as in clause 7.2.9) while D has not</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) sends a re-INVITE to notify an imminent-peril condition
	2	check	re-INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS
	3	check	re-INVITE received at the MCPTT controlling server
	4	check	The MCPTT controlling server loads the affiliated members of the mcptt-chat-group-A (either preconfigured or retrieved from the GMS) and, upon imminent-peril indicator, sends re-INVITE to joined users (B and C) and a new INVITE to D
	5	verify	Call still connected and imminent-peril state set in all elements

### 7.2.12 MCPTT User cancels the emergency condition of an on-demand Chat Group Call [CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/04]

This test covers the cancellation by a User of the in-progress emergency condition of a Chat Group Call.

Upon receiving such a request the MCPTT client shall set the group state to the proper states (MEG 1: no-emergency and MEGC 1: emergency-gc-capable) and generate a SIP re-INVITE request with the new indicators in the mcptt-info XML body according to clause 10.1.2.2.1.3 in ETSI TS 124 379 [9]. The controlling function shall forward the re-INVITE to all the affiliated and joined members of the group and shall send a MESSAGE to any possible affiliated but not joined members.

Message Sequence Diagram

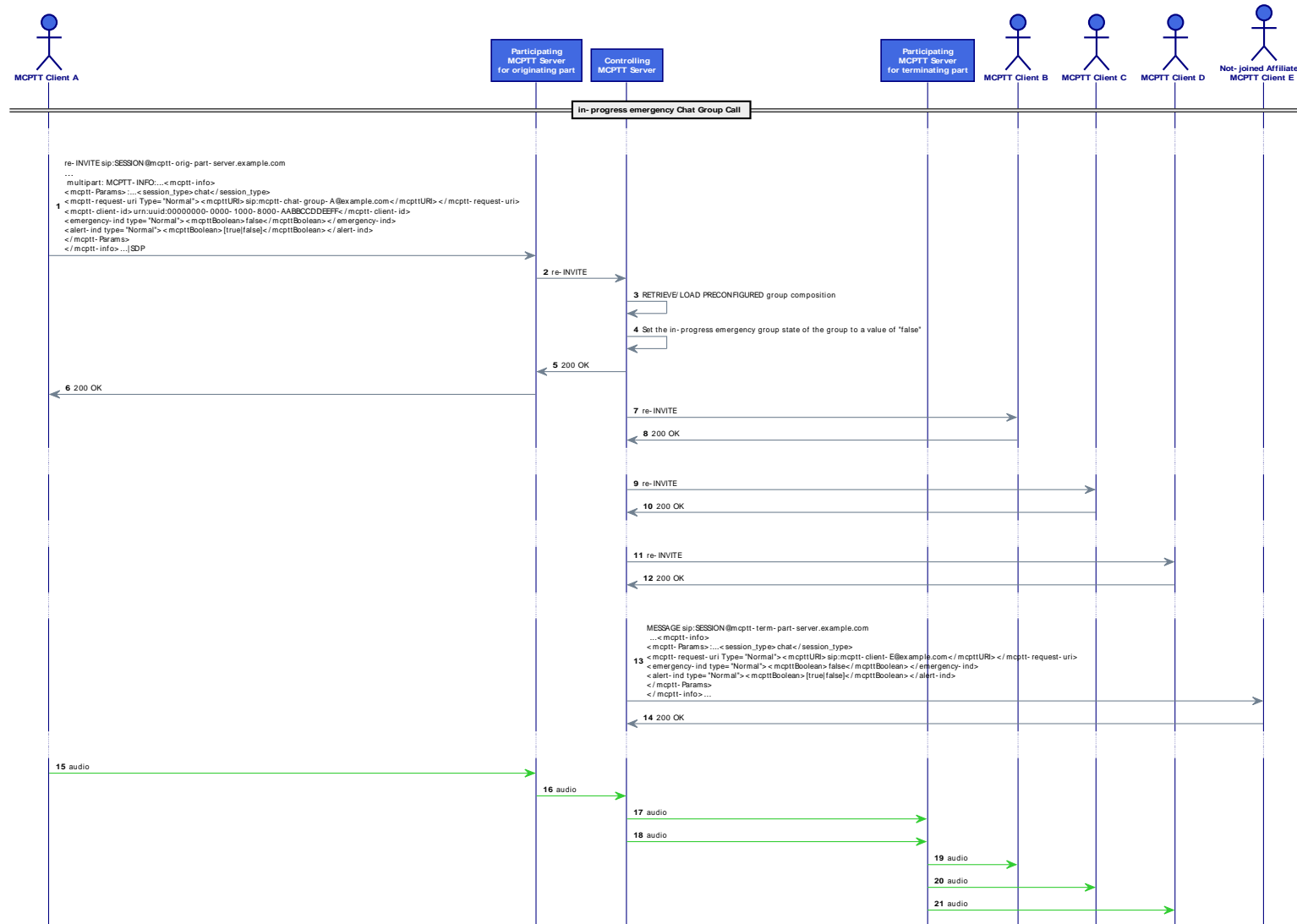


Figure 24: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/04 Message Sequence

## Message Details

[1] re-INVITE MCPTT Caller/UE --> MCPTT Participating

```
[re]INVITE sip:mcptt-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcptt-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt
Accept-Contact: *;+g.3gpp.mcptt/require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.mcptt";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Preferred-Identity: <sip:mcptt-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]
```

```
--[boundary]
Content-Type: application/sdp
```

```
v=0
o=MCPTTCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP
t=0 0
m=audio PORT RTP/AVP 105
a=label:1
i=speech
a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20
a=maxptime:240
m=application 1234 udp MCPTT
a=fmtp:MCPTT mc_queuing;mc_priority=5;mc_granted;mc_implicit_request
...
```

```
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml
```

```
<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <session-type>prearranged</session-type>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
    </mcptt-request-uri>
    <mcptt-client-id type="Normal">
      <mcpttString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcpttString>
    </mcptt-client-id>
    <broadcast-ind>true</broadcast-ind>
  </mcptt-Params>
</mcpttinfo>
--[boundary]
```

[13] MESSAGE MCPTT-Participating --> Affiliated but not joined User

MESSAGE sip:SESSION@mcptt-term-part-server.example.com

Content-Type: application/vnd.3gpp.mcptt-info+xml

```
<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <session-type>chat</session-type>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
    </mcptt-request-uri>
    <mcptt-client-id type="Normal">
      <mcpttString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcpttString>
    </mcptt-client-id>
    <emergency-ind type="Normal">
      <mcpttBoolean>>false</mcpttBoolean>
    </emergency-ind>
    <alert-ind type="Normal">
      <mcpttBoolean>[true|false]</mcpttBoolean>
    </alert-ind>
  </mcptt-Params>
</mcpttinfo>
```

## Interoperability Test Description

Table 28: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/04 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN/GROUP/CHAT/ONDEM/NFC/04		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of cancellation of the in-progress emergency condition of a chat Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system and users properly affiliated to the called chat group</li> <li>• Ongoing on-demand emergency chat Group Call</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) sends a re-INVITE to notify the ongoing chat Group Call losing the emergency conditions
	2	check	re-INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS
	3	check	re-INVITE received at the MCPTT controlling server
	4	check	The MCPTT controlling server loads the joined members of the mcptt-chat-group-A and sends re-INVITE to all of them
	5	check	The MCPTT controlling server sends a SIP MESSAGE to affiliated but not joined members
	6	verify	Call still connected and emergency state "removed" in all elements

### 7.2.13 MCPTT User cancels the imminent-peril condition of an on-demand Chat Group Call [CONN-MCPTT/ONNGROUP/CHAT/ONDEM/NFC/05]

This test covers the cancellation by a User of the in-progress imminent-peril condition of a Chat Group Call.

Upon receiving such a request the MCPTT client shall set the group state to the proper states (MIG 1: no-imminent-peril and MIGC 1: imminent-peril-gc-capable) and generate a SIP re-INVITE request with the new indicators in the mcptt-info XML body according to clause 10.1.2.2.1.5 in ETSI TS 124 379 [9].

The controlling function shall forward the re-INVITE to all the affiliated and joined members of the group and shall send a MESSAGE to any possible affiliated but not joined members.

Message Sequence Diagram

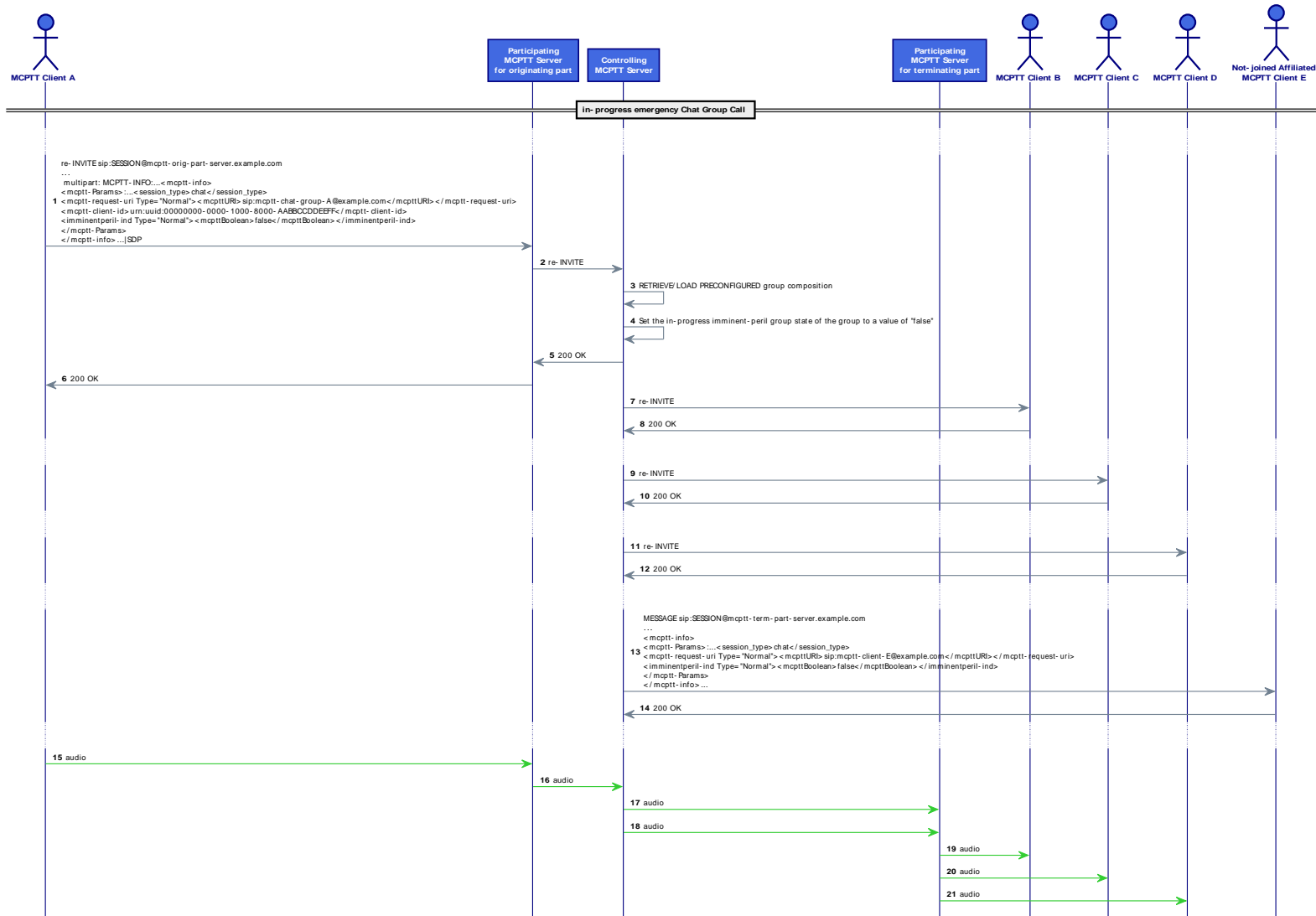


Figure 25: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/05 Message Sequence



## Message Details

```
[1] re-INVITE MCPTT Caller/UE --> MCPTT Participating
[re]INVITE sip:SESSION@server-orig-part.example.com SIP/2.0 To: <sip:mcptt-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt
Accept-Contact: *;+g.3gpp.mcptt;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt"; require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Preferred-Identity: <sip:mcptt-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]
--[boundary]
Content-Type: application/sdp
v=0 o=MCPTTCLIENT 1183811731 4248272445 IN IP4 IP s=c=IN IP4 IP t=0 0 m=audio PORT RTP/AVP 105
a=label:1 i=speech a=rtptime:105 AMR-WB/16000/1 a=fmtp:105 mode-change-period=1; mode-change-
capability=2; mode-change-neighbor=0; max-red=0 a=ptime:20 a=maxptime:240 m=application 1234 udp
MCPTT a=fmtp:MCPTT mc_queing;mc_priority=5;mc_granted;mc_implicit_request ...
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-instance">
<mcptt-Params>
<session-type>chat</session-type>
<mcptt-request-uri type="Normal">
<mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
</mcptt-request-uri>
<mcptt-client-id type="Normal">
<mcpttString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcpttString>
</mcptt-client-id>
<imminentperil-ind Type="Normal">
<mcpttBoolean>>true</mcpttBoolean>
</imminentperil-ind>
</mcptt-Params>
</mcpttinfo>
--[boundary]

[13] MESSAGE MCPTT-Participating --> Affiliated but not joined User
MESSAGE sip:SESSION@mcptt-term-part-server.example.com
Content-Type: application/vnd.3gpp.mcptt-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-instance">
<mcptt-Params>
<session-type>chat</session-type>
<mcptt-request-uri type="Normal">
<mcpttURI>sip:mcptt-group-A@example.com</mcpttURI>
</mcptt-request-uri>
<mcptt-client-id type="Normal">
<mcpttString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcpttString>
</mcptt-client-id>
<imminentperil-ind Type="Normal">
<mcpttBoolean>>false</mcpttBoolean>
</imminentperil-ind>
</alert-ind>
</mcptt-Params>
</mcpttinfo>
```

## Interoperability Test Description

Table 29: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/05 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN/GROUP/CHAT/ONDEM/NFC/05		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of cancellation of the in-progress imminent-peril condition of a chat Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS and MCPTT system and users properly affiliated to the called chat group</li> <li>Ongoing on-demand imminent-peril chat Group Call</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) sends a re-INVITE to notify the ongoing chat Group Call losing the emergency conditions
	2	check	re-INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS
	3	check	re-INVITE received at the MCPTT controlling server
	4	check	The MCPTT controlling server loads the joined members of the mcptt-chat-group-A and sends re-INVITE to all of them
	5	check	The MCPTT controlling server sends a SIP MESSAGE to affiliated but not joined members
	6	verify	Call still connected and imminent-peril state "removed" in all elements

### 7.2.14 MCPTT User initiates a Chat group Call using pre-established session [CONN-MCPTT/ONN/GROUP/CHAT/PRE/NFC/01]

This test case comprises the establishment of a "regular" Chat Group Call (i.e. neither emergency nor imminent-peril Chat Group Call) using pre-established session. The procedures are similar to those in clause 7.2.7 but use specific Chat Group Call elements in the signalling as explained in clauses 10.1.2.2.2, 10.1.2.2.1.6, 10.1.2.3.2.1, 10.1.2.3.2.2 and 10.1.2.4.1.1 in ETSI TS 124 379 [9].

Therefore, after a successful establishment of all the sessions of the members the originating MCPTT User shall send a SIP REFER with the Request URI that of the session identity of the pre-established session. In the application/resource-lists MIME body a single <entry> element containing a "uri" attribute set to the chat group identity, extended with an hname "body" URI header field populated with the data to be transferred to the Chat Group INVITE to be sent to the Controlling (i.e. an application/sdp MIME body containing an SDP offer if the session parameters of the pre-established session require modification or if implicit floor control is required and an application/vnd.3gpp.mcptt-info MIME body with the <session-type> element set to a value of "chat"; and the <mcptt-client-id> element set to the MCPTT client ID of the originating MCPTT client).

Later, the participating function shall create the INVITE to be forwarded to the controlling that will handle it following the same procedures as in clause 7.2.9.

If other affiliated members of the group want to use their pre-established sessions to join the Chat Group Call they shall repeat the procedure.

Message Sequence Diagram

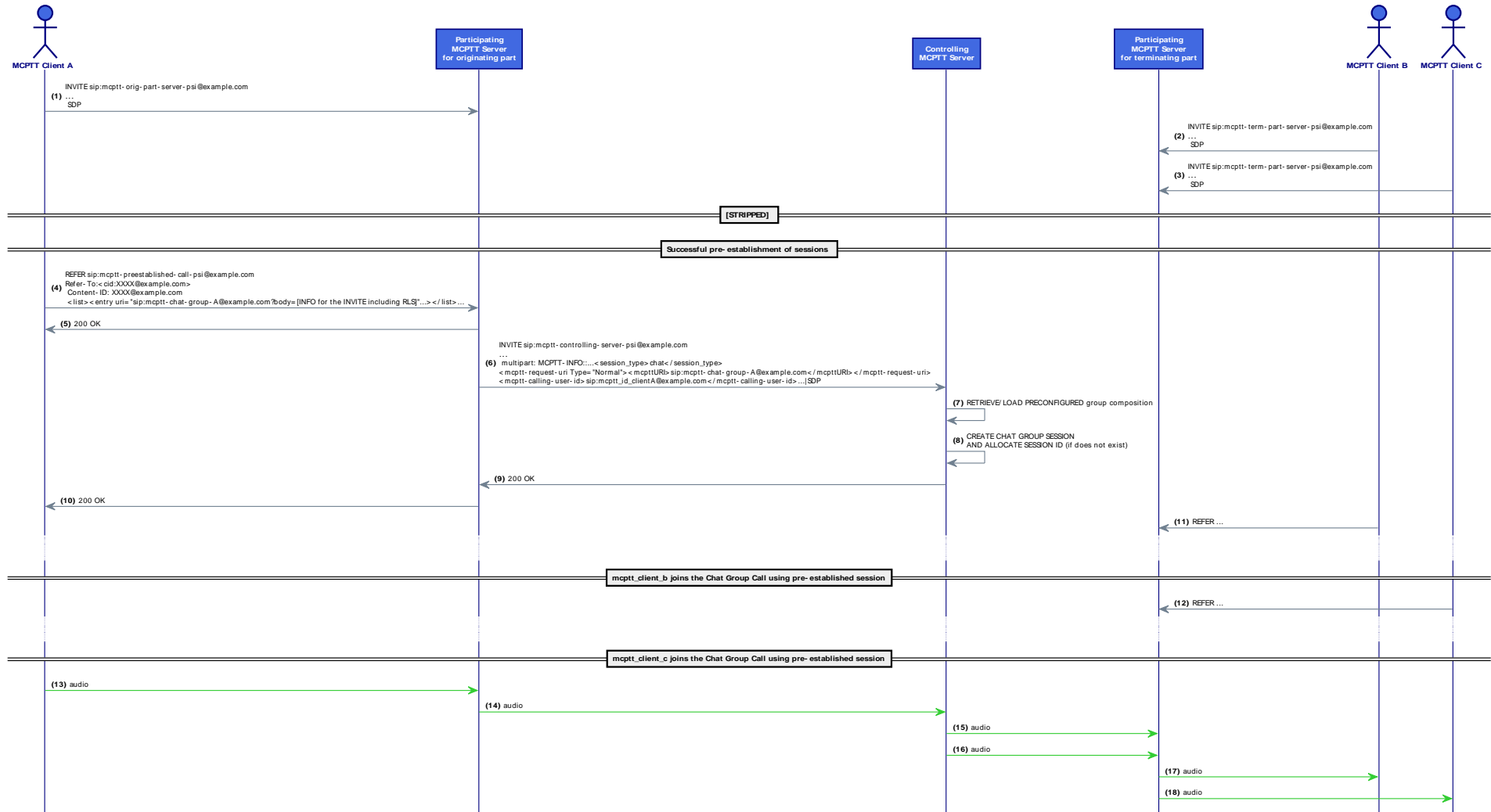


Figure 26: CONN-MCPTT/ONN/GROUP/CHAT/PRE/NFC/01 Message Sequence

## Message Details

```
[4] REFER MCPTT Caller/UE --> MCPTT Participating
REFER sip:mcptt-preestablished-session-psi@example.com SIP/2.0
From: <sip:mcptt-client-A@example.com>;tag=ABCD
To: <sip:mcptt-preestablished-session-psi@example.com>
Contact: <sip:mcptt-client-A@IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3
A3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt
CSeq: 2 REFER
P-Asserted-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Asserted-Identity: <sip:mcptt-client-A@example.com>
Supported: norefersub
Refer-Sub: false
Require: multiple-refer
Target-Dialog: l-26282@IP;local-tag=1;remote-tag=y1DK7rrj2ag0m
Content-Type: application/resource-lists+xml
Resource-Priority: mcpttp.5
Refer-To: <cid:g8QyvQSQ0rBgy7tg8gt45@example.com> Content-ID: g8QyvQSQ0rBgy7tg8gt45@example.com
<?xml version="1.0" encoding="UTF-8" ?>
<resource-lists xmlns="urn:ietf:params:xml:ns:resource-lists"
xmlns:cc="urn:ietf:params:xml:ns:copycontrol"> <list>
<entry uri="sip:mcptt_id_clientB@example.com?
body=-YKP42ALY6Zy3ey%0AContent-Type%3A%20application%2Fvnd.3gpp.mcptt-info
%2Bxml%0A%0A%3C%3Fxml%20version%3D%221.0%22%20encoding%3D%22UTF-8%22%3F%3E
%0A%3Cmcpttinfo%20xmlns%3D%22urn%3A3gpp%3Ans%3A%3Amcpttinfo%3A1.0%22%20xmlns%3
Axsi%3D%22http%3A%2F%2Fwww.w3.org%2F2001%2FXMLSchema-instance%22%3E%20%0A
%20%20%3Cmcptt-Params%3E%20%0A%20%20%20%20%3Csession-type%3Echat%3C%2 Fsession-
type%3E%0A%20%20%20%20...Content-Type%3A%20application%2Fsdp%0A
%0Av%3D%0A%3i...-YKP42ALY6Zy3ey--&Answer-Mode=Auto& Content-
Type=multipart%2Fmixed%3Bboundary%3DYKP42ALY6Zy3ey" cc:copyControl="to"/>
</list>
</resource-lists>
```

## Interoperability Test Description

Table 30: CONN/GROUP/CHAT/PRE/NFC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN/GROUP/CHAT/PRE/NFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a Chat Group Call using pre-established sessions		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system and users properly affiliated to the called chat group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) pre-establishes a session
	2	check	Pre-established session is established
	3	check	The rest of affiliated Users successfully complete the pre-establishment of their sessions
	4	stimulus	User 1 (mcptt_id_clientA@example.com) calls mcptt-chat-group-A using his/her pre-established session
	5	check	The REFER arrives at the participating which forwards the associated reINVITE to the controlling function. The latter activates the Chat Group Call
	6	check	Users 2 and 3 repeat the same procedure
	7	verify	Call connected and multiple media flows exchanged

### 7.2.15 MCPTT User initiates an on-demand private MCPTT call in automatic commencement model with floor control [CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/01]

This test shall verify a pure private automatic on-demand call with floor control and MCPTT users in the same MCPTT system as defined in clause 10.7.2.2.1 in ETSI TS 123 379 [4]. Specific procedures for private calls with floor control are defined in clause 11.1.1 in ETSI TS 124 379 [9].

Note that WFC stands for "with floor control" and NFC "no floor control". Even though it referred to floor control (half-duplex) calls, SIP connectivity only will be tested. Additionally, unless explicitly indicated, the audio flow related arrows simply depict the half/full duplex conversation, therefore FC mechanisms will be omitted.

The automatic commencement mode indicates the terminating Client will take the call without interacting with the User (see IETF RFC 5373 [31] for the message format in the originating User -specially AnswerMode header- and procedures in the terminating User in clause 6.2.3.1.1 in ETSI TS 124 379 [9]).

## Message Sequence Diagram

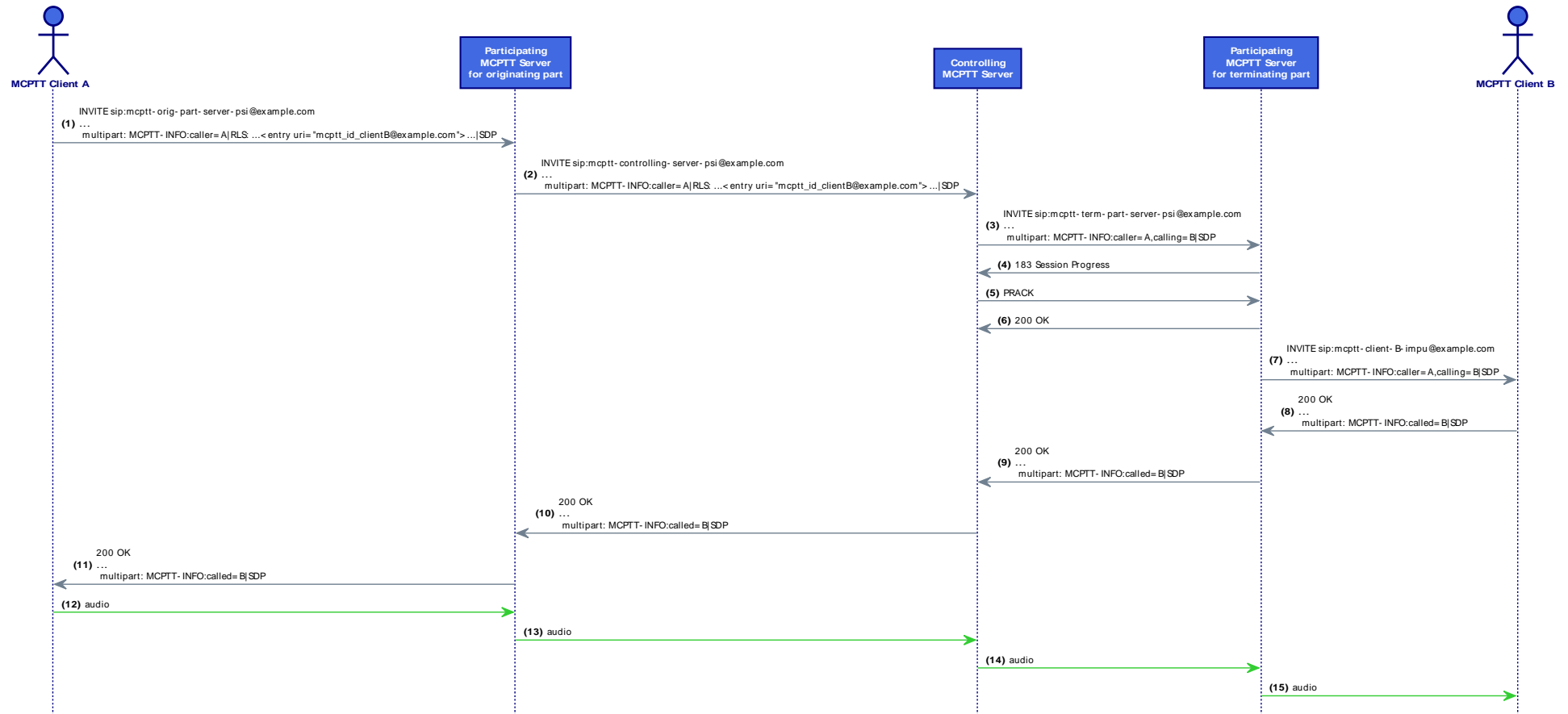


Figure 27: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/01 Message Sequence

## Message Details

```
[1] INVITE MCPTT Caller/UE --> MCPTT Participating
INVITE sip:mcptt-server-orig-part-psi@example.com SIP/2.0
Via: SIP/2.0/UDP IP:PORT;branch=BRANCH
From: <sip:mcptt-client-A-impu@example.com>;tag=TAG
To: <sip:mcptt-server-orig-part-psi@example.com>
Contact: <sip:mcptt-client-A-impu@IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcptt";+g.3gpp.mcptt ...
Accept-Contact: *;+g.3gpp.mcptt;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt ";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
[Privacy: id]
P-Preferred-Identity: <sip:mcptt-client-A-impu@example.com>
Answer-Mode: Auto
Content-Type: multipart/mixed; boundary=[boundary]
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-instance">
<mcptt-Params>
<session-type>private</session-type>
</mcptt-Params>
</mcpttinfo>
--[boundary]
Content-Type: application/resource-lists+xml
<?xml version="1.0" encoding="UTF-8"?>
<resource-lists xmlns="urn:ietf:params:xml:ns:resource-lists" xmlns:cc="
urn:ietf:params:xml:ns:copycontrol">
<list>
<entry uri="mcptt_id_clientB@example.com" cc:copyControl="to"/> </list>
</resource-lists>
--[boundary]
Content-Type: application/sdp ...
--[boundary]--
```



## Interoperability Test Description

Table 31: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with automatic commencement mode		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls User 2 (mcptt_id_clientB@example.com)
	2	check	Dialog creating INVITE received at the MCPTT participating server of User 1
	3	check	The participating server adapts the mcptt-info accordingly and creates an INVITE to the controlling server
	4	check	The controlling server check permissions and forward the INVITE to the participating server of the callee
	5	check	Upon arrival of the INVITE adapted by the terminating participating function at User 2 the call is automatically taken
	6	verify	Call connected and media flows exchanged

### 7.2.16 MCPTT User initiates an on-demand private MCPTT call in manual commencement mode with floor control [CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WFC/NFC/01]

This test covers the Manual commencement mode of the private call. Therefore the INVITE should include an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [31] while in test CONN-MCPTT/ONN\_OTT/PRIV/AUTO/ONDEM/WFC/NFC/01 covered in clause 7.2.15 the value of the header should be "Auto". The resulting procedure is quite equivalent but 180 Ringing packet is now generated and forwarded to the inviting MCPTT user.

## Message Sequence Diagram

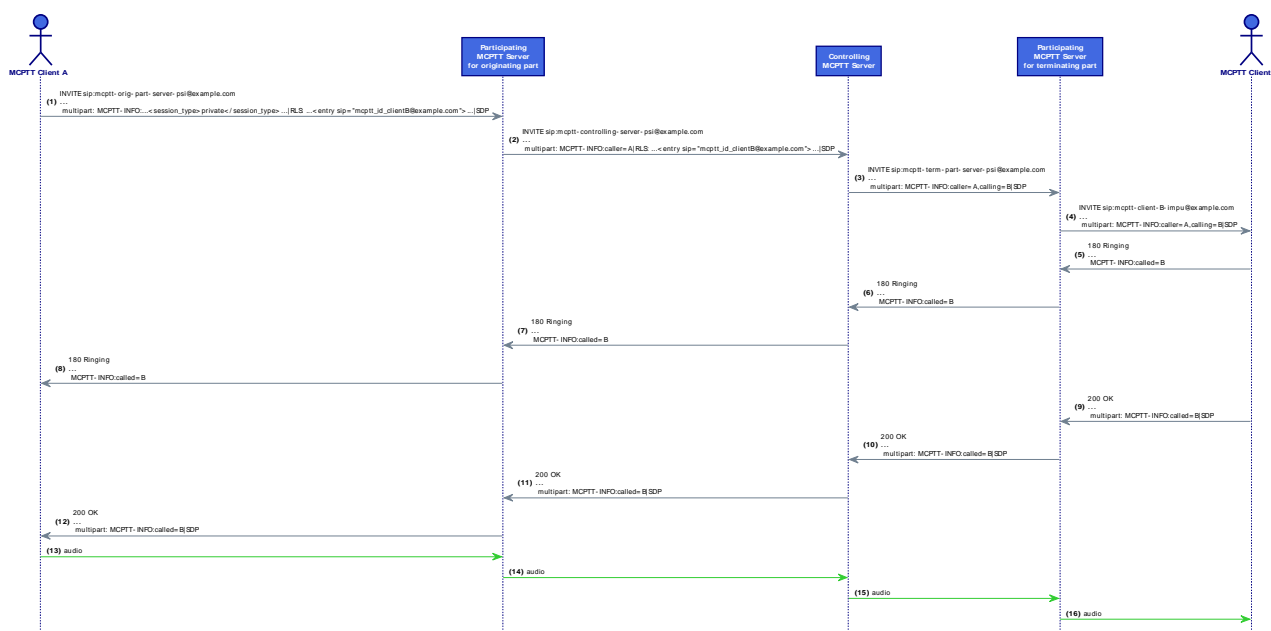


Figure 28: CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WFC/NFC/01 Message Sequence

## Message Details

The initial **INVITE** would be equivalent to that in clause 8.2.1 but with the header: **Answer-Mode: Manual**.

## Interoperability Test Description

Table 32: CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WFC/NFC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WFC/NFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with manual commencement mode		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls User 2 (mcptt_id_clientB@example.com)
	2	check	Dialog creating INVITE received at the MCPTT participating server of User 1
	3	check	The participating server adapts the mcptt-info accordingly and creates an INVITE to the controlling server
	4	check	The controlling server check permissions and forward the INVITE to the participating server of the callee
	5	check	Upon arrival of the INVITE adapted by the terminating participating function to the terminating Client User 2 is notified
	6	check	User 2 accepts the private call and all the signalling is completed
	7	verify	Call connected and media flows exchanged

### 7.2.17 MCPTT User initiates a pre-established private MCPTT call in automatic commencement mode with floor control [CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/01]

This test shall verify a pure private automatic pre-established call with floor control and MCPTT users in the same MCPTT system as defined in clause 10.7.2 in ETSI TS 123 379 [4]. Most procedures are described in clause 8 (for pre-establishment), clause 11.1.1.2.2 (for private call) in ETSI TS 124 379 [9] and clause 9 in ETSI TS 124 380 [10] (for Floor Controlling mechanisms).

According to clause 10.5 in ETSI TS 123 379 [4] a MCPTT client establishes one or more pre-established sessions to an MCPTT server after SIP registration, and prior to initiating any of the above procedures to other MCPTT users. When establishing a pre-established session, the MCPTT client negotiates the media parameters to reduce call setup delay by avoiding the need to negotiate media parameters and reserving bearer resources during the MCPTT call. In fact after the pre-established session is established, the media bearer carrying the floor control messages shall be always active. Additionally, the MCPTT client shall be able to activate the media bearer carrying the voice whenever needed:

- Immediately after the pre-established session procedure; or
- Using SIP signalling when an MCPTT call is initiated.

Considering that both the originating and terminating user may or may not have a pre-established session, the procedure varies according to those combinations.

For an incoming MCPTT call setup for a private call using a pre-established session, an MCPTT UE is notified of the start of the MCPTT call control using SIP procedures in manual commencement mode and using floor control procedures in automatic commencement mode. Therefore sequence diagrams in clauses 7.2.17 and 7.2.18 differ in the notification to the callee. On-Network pre-established sessions in both cases demand:

- MCPTT client: procedures specified in clauses 8.2.1, 8.3.1 and 8.4.1 in ETSI TS 124 379 [9], and the procedures specified in ETSI TS 124 380 [10].
- MCPTT server: procedures specified in clauses 8.2.2, 8.3.2 and 8.4.2 in ETSI TS 124 379 [9], and the procedures specified in ETSI TS 124 380 [10].

## Message Sequence Diagram

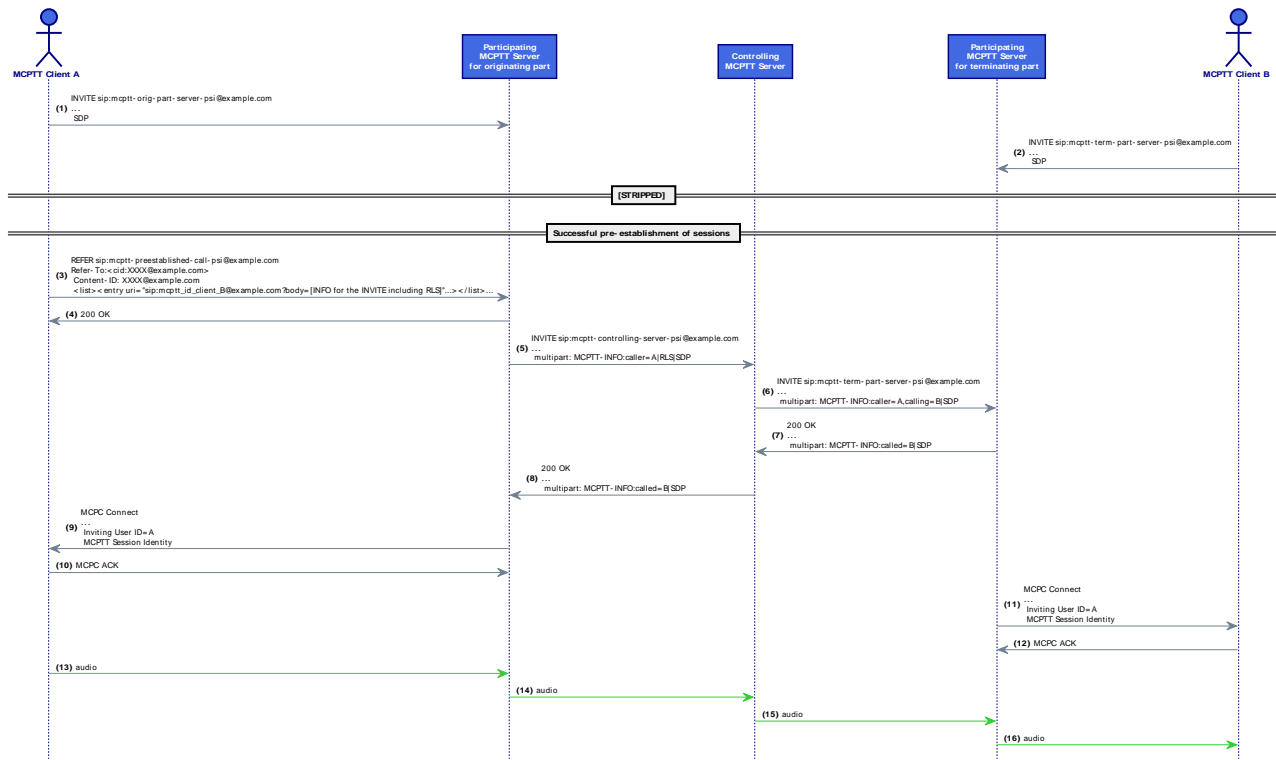


Figure 29: CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/01 Message Sequence

## Message Details

```
[3] REFER MCPTT Caller/UE --> MCPTT Participating
REFER sip:mcptt-preestablished-session-psi@example.com SIP/2.0
From: <sip:mcptt-client-A@example.com>;tag=ABCD
To: <sip:mcptt-preestablished-session-psi@example.com>
Contact: <sip:mcptt-client-A@IP:PORT>;+g.3gpp.icsi-ref="urn:3Aurn-7%3
A3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt
CSeq: 2 REFER
P-Asserted-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Asserted-Identity: <sip:mcptt-client-A@example.com>
Supported: norefersub
Refer-Sub: false
Require: multiple-refer
Target-Dialog: 1-26282@IP;local-tag=1;remote-tag=y1DK7rrj2ag0m
Content-Type: application/resource-lists+xml Resource-Priority: mcpttp.5
Refer-To: <cid:g8QyvQSQ0rBgy7tg8gt45@example.com>
Content-ID: g8QyvQSQ0rBgy7tg8gt45@example.com
<?xml version="1.0" encoding="UTF-8"?>
<resource-lists xmlns="urn:ietf:params:xml:ns:resource-lists" xmlns:cc="
urn:ietf:params:xml:ns:copycontrol">
<list>
<entry uri="sip:mcptt_id_clientB@example.com?body=YKP42ALY6Zy3ey%0
AContent-Type%3A%20application%2Fvnd.3gpp.mcptt-info%2Bxml%0A%0A%3C%3Fxml
%20version%3D%221.0%22%20encoding%3D%22UTF-8%22%3F%3E%0A%3Cmcpttinfo%3E
```



## 7.2.18 MCPTT User initiates a pre-established private MCPTT call in manual commencement mode with floor control [CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WFC/NFC/01]

As specified in clause 6.3.2.2.6.3 of ETSI TS 124 379 [9] the procedure is equivalent to the Automatic mode but includes a new SIP signalling procedure in the terminating part and upon receiving a SIP 200 (OK) response to the SIP re-INVITE request, the participating MCPTT function sends a MCPC Connect message, in order to give MCPTT session identity to the terminating MCPTT client. The MCPTT client B accepts the invitation and sends an MCPC Acknowledge message as described in ETSI TS 124 380 [10], annex A.

Message Sequence Diagram

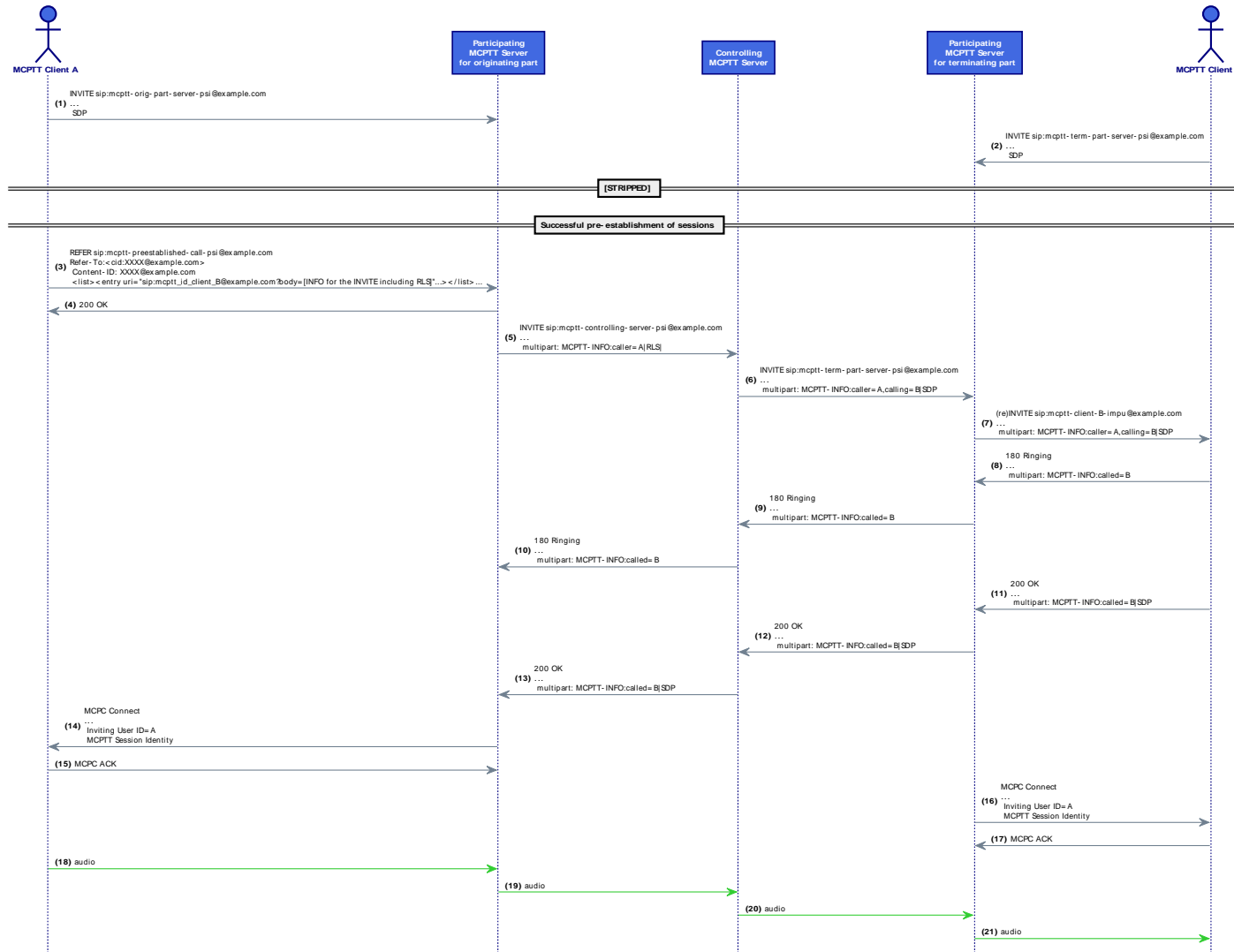


Figure 30: CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WFC/NFC/01 Message Sequence

## Message Details

Equivalent to that in **Auto** Mode (clause 8.2.3) but with the header Answer-Mode=Manual in the body header of the URI attribute of the <entry>element in the application/resource-lists MIME body of the **REFER** message.

## Interoperability Test Description

**Table 34: CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WFC/NFC/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WFC/NFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with manual commencement mode using pre-established sessions		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	The MCPTT clients of User 1 (mcptt_id_clientA@example.com) and User 2 (mcptt_id_clientB@example.com) pre-establish their respective session to the proper participating
	2	check	Sessions pre-established
	3	stimulus	User 1 calls User 2 using pre-established session
	4	check	REFER is created and sent to the participating server of User 1
	5	check	The participating server creates the proper INVITE with the data embedded in the REFER and forwards it to the controlling
	6	check	The controlling server forwards the INVITE to the participating server of the callee and sends a 200 ok back to the participating of the caller
	7	check	The participating of the caller notifies him/her by sending a (re)INVITE with the SDP of the callee
	8	check	User 2 answers the call and MCPC Connect messages are triggered by both participating servers
	9	verify	Call connected and media flows exchanged

### 7.2.19 MCPTT User initiates an on-demand private MCPTT call in automatic commencement mode without floor control [CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WOFC/01]

This test shall verify a pure private automatic on-demand call without floor control and MCPTT users in the same MCPTT system as defined in clause 10.7.2.2.1 in ETSI TS 123 379 [4]. Specific procedures for private calls without floor control are defined in clause 11.1.2 in ETSI TS 124 379 [9].

More specifically, when the MCPTT user wants to make an on-demand private call without floor control, the MCPTT client shall follow the procedures in clause 11.1.1.2.1.1 in ETSI TS 124 379 [9] (those shown in clause 7.2.15) but not including any Implicit floor control mechanism and removing the media-level section for the media floor control entity.



Message Sequence Diagram

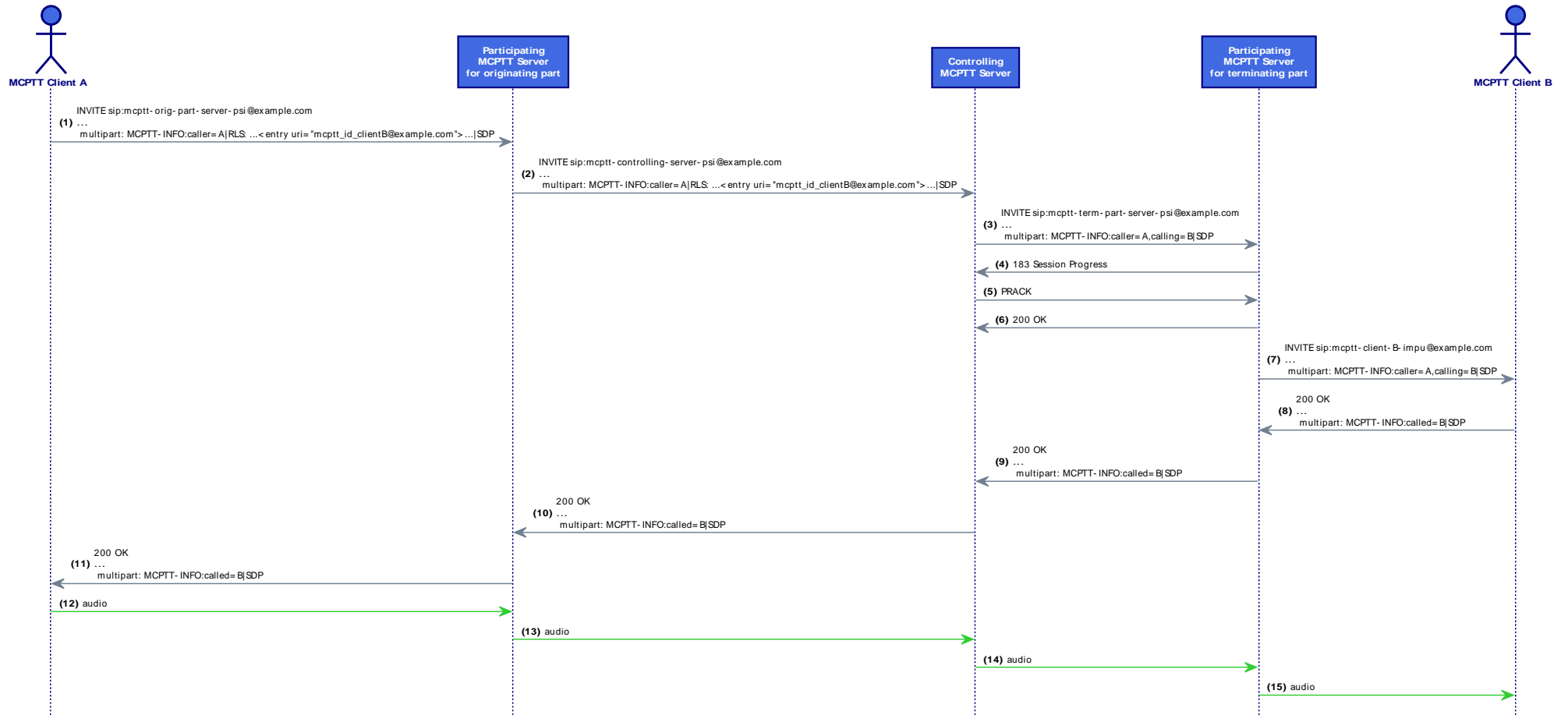


Figure 31: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WOFC/01 Message Sequence

## Message Details

```

[1] INVITE MCPTT Caller/UE --> MCPTT Participating
INVITE sip:mcptt-server-orig-part-psi@example.com SIP/2.0
Via: SIP/2.0/UDP IP:PORT;branch=BRANCH
From: <sip:mcptt-client-A-impu@example.com>;tag=TAG
To: <sip:mcptt-server-orig-part-psi@example.com>
Contact: <sip:mcptt-client-A-impu@IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcptt";+g.3gpp.mcptt ...
Accept-Contact: *;+g.3gpp.mcptt;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt ";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt [Privacy: id]
P-Preferred-Identity: <sip:mcptt-client-A-impu@example.com>
Answer-Mode: Auto
Content-Type: multipart/mixed; boundary=[boundary]
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-instance">
<mcptt-Params>
<session-type>private</session-type>
</mcptt-Params>
</mcpttinfo>
--[boundary]
Content-Type: application/resource-lists+xml
<?xml version="1.0" encoding="UTF-8"?>
<resource-lists xmlns="urn:ietf:params:xml:ns:resource-lists" xmlns:cc="
urn:ietf:params:xml:ns:copycontrol">
<list>
<entry uri="mcptt_id_clientB@example.com" cc:copyControl="to"/> </list>
</resource-lists>
--[boundary]
Content-Type: application/sdp
v=0 o=MCPTTCLIENT 1183811731 4248272445 IN IP4 IP s=c=IN IP4 IP t=0 0 m=audio PORT RTP/AVP 105
a=label:1 i=speech
a=rtpmap:105 AMR-WB/16000/1 a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-
neighbor=0; max-red=0 a=ptime:20 a=maxptime:240
==> NOTE: REMOVED LINES
-- m=application 1234 udp MCPTT
-- a=fmtp:MCPTT mc_queueing;mc_priority=5;mc_granted;mc_implicit_request
=====
...
--[boundary]

```

## Interoperability Test Description

Table 35: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WOFC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WOFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call without floor control with automatic commencement mode		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls User 2 (mcptt_id_clientB@example.com)
	2	check	Dialog creating INVITE received at the MCPTT participating server of User 1
	3	check	The participating server adapts the mcptt-info accordingly and creates an INVITE to the controlling server
	4	check	The controlling server check permissions and forward the INVITE to the participating server of the callee
	5	check	Upon arrival of the INVITE adapted by the terminating participating function at User 2 the call is automatically taken
	6	verify	Call connected and bidirectional media flows exchanged

## 7.2.20 MCPTT User initiates an on-demand private MCPTT call in manual commencement mode without floor control [CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WOFC/01]

Equivalent test to that in clause 7.2.16 but with no media-level section for the media floor control entity in the exchanged SDPs.

**Message Sequence Diagram:** check figure 25.

### Message Details

Check clause 7.2.16 but with an SDP with no m=application XXXX udp MCPTT media floor control entity.

## Interoperability Test Description

Table 36: CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WOFC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WOFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call without floor control with manual commencement mode		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls User 2 (mcptt_id_clientB@example.com)
	2	check	Dialog creating INVITE received at the MCPTT participating server of User 1
	3	check	The participating server adapts the mcptt-info accordingly and creates an INVITE to the controlling server
	4	check	The controlling server check permissions and forward the INVITE to the participating server of the callee
	5	check	Upon arrival of the INVITE adapted by the terminating participating function to the terminating Client User 2 is notified
	6	check	User 2 accepts the private call and all the signalling is completed
	7	verify	Call connected and simultaneous bidirectional media flows exchanged

### 7.2.21 MCPTT User initiates a pre-established private MCPTT call in automatic commencement mode without floor control [CONN-MCPTT/ONN/PRIV/AUTO/PRE/WOFC/01]

Equivalent test to that in clause 7.2.17 but with no media-level section for the media floor control entity in the exchanged SDPs.

**Message Sequence Diagram:** check figure 26.

Message Details

Check clause 7.2.17 but with an SDP with no m=application XXXX udp MCPTT media floor control entity.

## Interoperability Test Description

Table 37: CONN-MCPTT/ONN/PRIV/AUTO/PRE/WOFC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/PRIV/AUTO/PRE/WOFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call without floor control with automatic commencement mode using pre-established sessions		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	The MCPTT clients of User 1 (mcptt_id_clientA@example.com) and User 2 (mcptt_id_clientB@example.com) pre-establish their respective session to the proper participating
	2	check	Sessions pre-established
	3	stimulus	User 1 calls User 2 using pre-established session
	4	check	REFER sent to the participating of User 1
	5	check	The participating server creates the proper INVITE with the data embedded in the REFER and forwards it to the controlling
	6	check	The controlling server forwards the INVITE to the participating server of the callee and sends a 200 ok back to the participating of the caller
	7	check	The participating of the caller notifies him/her using MCPC Connect message
	8	check	Similarly Client User 2 is notified with MCPC Connect and Call automatically accepted
	9	verify	Call connected and simultaneous bidirectional media flows exchanged

## 7.2.22 MCPTT User initiates a pre-established private MCPTT call in manual commencement mode without floor control [CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WOFC/01]

Equivalent test to that in clause 7.2.18 but with no media-level section for the media floor control entity in the exchanged SDPs.

**Message Sequence Diagram:** check figure 27.

### Message Details

Check clause 7.2.18 but with an SDP with no m=application XXXX udp MCPTT media floor control entity.

## Interoperability Test Description

Table 38: CONN/ONN/PRIV/MANUAL/PRE/WOFC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WOFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call without floor control with manual commencement mode using pre-established sessions		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	The MCPTT clients of User 1 (mcptt_id_clientA@example.com) and User 2 (mcptt_id_clientB@example.com) pre-establish their respective session to the proper participating
	2	check	Sessions pre-established
	3	stimulus	User 1 calls User 2 using pre-established session
	4	check	REFER sent to the participating of User 1
	5	check	The participating server creates the proper INVITE with the data embedded in the REFER and forwards it to the controlling
	6	check	The controlling server forwards the INVITE to the participating server of the callee and sends a 200 ok back to the participating of the caller
	7	check	The participating of the caller notifies him/her by sending a (re)INVITE with the SDP of the callee
	8	check	User 2 answers the call and MCPC Connect messages are triggered by both participating servers
	9	verify	Call connected and simultaneous bidirectional media flows exchanged

## 7.2.23 MCPTT User initiates an on-demand first-to-answer MCPTT call with floor control [CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/01]

This test covers a first-to-answer call equivalent to CONN-MCPTT/ONN//PRIV/MANUAL/ONDEM/WFC/NFC/01 described in clause 7.2.16. Therefore, the call is actually started when the first MCPTT user among multiple potential target recipients answers following the procedures described in clauses 11.1.1.2.1, 11.1.1.3.1.1 and 11.1.1.4 in ETSI TS 124 379 [9] and according to rules and procedures in IETF RFC 5366 [30].

### Message Sequence Diagram

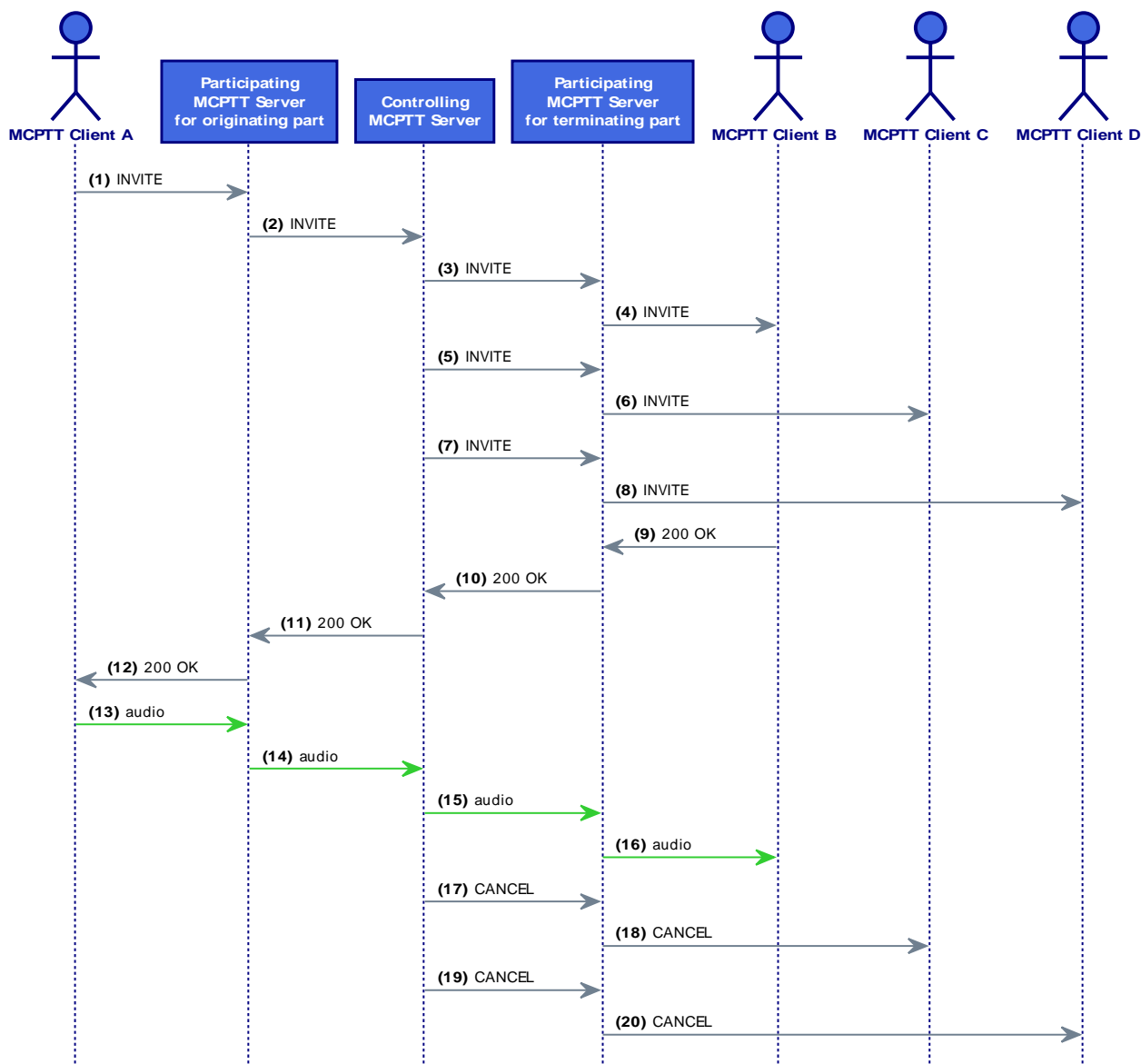


Figure 32: CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/01 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

**Table 39: CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)</li> <li>MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls a list of users (User 2, 3, 4...) (mcptt_id_clientB,C,D...@example.com)
	2	check	Dialog creating INVITE received at the MCPTT participating server of User 1
	3	check	The participating server eventually adapts the resource-list and creates an INVITE to the controlling server
	4	check	The controlling server check permissions and forward the INVITE to the participating server(s) of the callee(s)
	5	check	Upon arrival of the INVITE adapted by the terminating participating function to the terminating first-to-answer Client User 2 is notified
	6	check	User 2 accepts the private call and all the signalling is completed
	7	check	Upon notification of the first-answering-callee the rest of dialogs are cancelled
	8	verify	Call connected and media flows exchanged

### 7.2.24 MCPTT User initiates an on-demand first-to-answer MCPTT call without floor control [CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WOFC/01]

This test covers a first-to-answer call equivalent to CONN-MCPTT/ONN\_OTT/FIRST/MANUAL/ONDEM/WFC/NFC/01 described in clause 7.2.23. Clause 11.1.2 in ETSI TS 124 379 [9] describes the overall procedure, basically the same as the floor control case but with the following exceptions:

- 1) in step 12) of clause 11.1.1.2.1.1 of ETSI TS 124 379 [9] the MCPTT client shall not offer a media-level section for a media-floor control entity; and
- 2) step 13) of clause 11.1.1.2.1.1 ETSI TS 124 379 [9] shall be ignored.

#### Message Sequence Diagram

Check figure 32.



## Message Details

Check clause 7.2.23 but with an SDP with no m=application XXXX udp MCPTT media floor control entity.

## Interoperability Test Description

**Table 40: CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WOFC/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WOFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls a list of users User 2, 3, 4... (mcptt_id_clientB,C,D...@example.com)
	2	check	Dialog creating INVITE (without FC) received at the MCPTT participating server
	3	check	The participating server eventually adapts the resource-list and creates an INVITE to the controlling server
	4	check	The controlling server check permissions and forward the INVITE to the participating server(s) of the callee(s)
	5	check	Upon arrival of the INVITE adapted by the terminating participating function to the terminating first-to-answer Client User 2 is notified
	6	check	User 2 accepts the private call and all the signalling is completed
	7	check	Upon notification of the first-answering-callee the rest of dialogs are cancelled
	8	verify	Call connected and media flows exchanged

### 7.2.25 MCPTT User initiates an on-demand first-to-answer MCPTT call with floor control using pre-established sessions [CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/01]

This test covers a first-to-answer call equivalent to CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/01 described in clause 7.2.23 but using pre-established sessions (therefore, using the session establishment mechanism and later REFER message and MCPC protocol as in CONNMCPPT/ONN/PRIV/MANUAL/PRE/WFC/NFC/01, clause 7.2.18). All the procedure are described in clauses 11.1.1.2.2, 11.1.1.3.1.2, 11.1.3.2.2 and 11.1.1.4 in ETSI TS 124 379 [9] and according to rules and procedures in IETF RFC 5366 [30].

Message Sequence Diagram

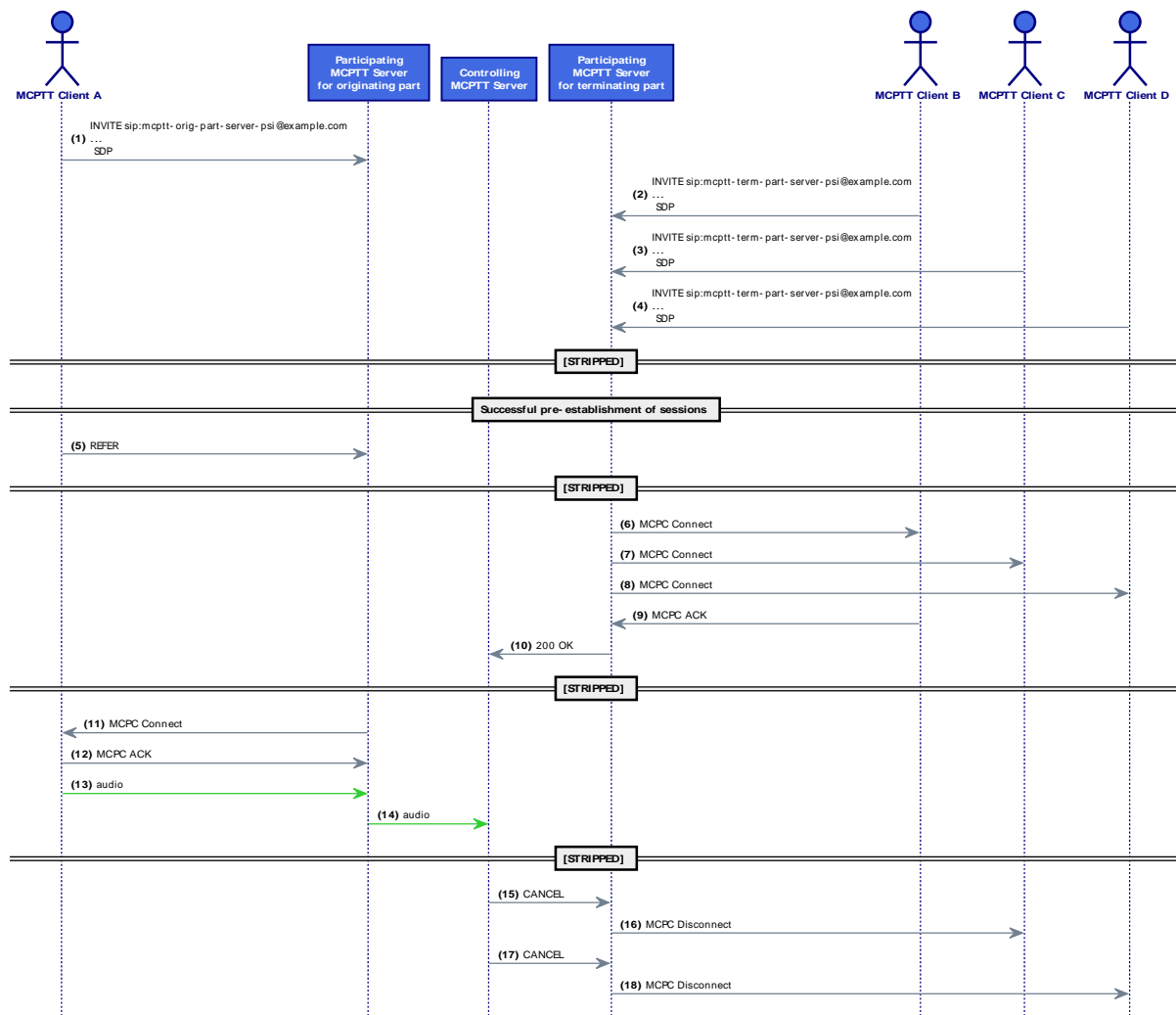


Figure 33: CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/01 Message Sequence

Message Details

Trace Pending

Table 41: CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) preestablishes a session
	2	check	Pre-established session is established
	3	check	The rest of Users successfully complete the pre-establishment of their sessions
	4	stimulus	User 1 (mcptt_id_clientA@example.com) calls a list of users User 2, 3, 4... (mcptt_id_clientB,C,D...@example.com)
	5	check	Dialog creating REFER received at the MCPTT participating server of User 1
	6	check	The participating server eventually adapts the resource-list and creates an INVITE to the controlling server
	7	check	Upon notification of the first-answering-callee the rest of dialogs are cancelled
	8	verify	Call connected and media flows exchanged

## 7.2.26 MCPTT User initiates a pre-established first-to-answer MCPTT call in manual commencement mode without floor control [CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WOFC/01]

Equivalent test to that in clause 7.2.25 but with no media-level section for the media floor control entity in the exchanged SDPs.

Message Sequence Diagram

Check figure 30.

Message Details

Check clause 7.2.18 but with an SDP with no m=application XXXX udp MCPTT media floor control entity.

Table 42: CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WOFC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WOFC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call without floor control with manual commencement mode using pre-established sessions		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	The MCPTT clients of User 1 (mcptt_id_clientA@example.com) and User 2 (mcptt_id_clientB@example.com) pre-establish their respective session to the proper participating Sessions pre-established
	2	check	Sessions pre-established
	3	stimulus	User 1 calls User 2 using pre-established session
	4	check	REFER sent to the participating of User 1
	5	check	The participating server creates the proper INVITE with the data embedded in the REFER and forwards it to the controlling
	6	check	The controlling server forwards the INVITE to the participating server of the callee and sends a 200 ok back to the participating of the caller
	7	check	The participating of the caller notifies him/her by sending a (re)INVITE with the SDP of the callee
	8	check	User 2 answers the call and MCPC Connect messages are triggered by both participating servers
	9	verify	Call connected and simultaneous bidirectional media flows exchanged

## 7.2.27 MCPTT User setups a private-call callback [CONN-MCPTT/ONN/CALLBACK/SETUP-/01]

MCPTT user 1 initiates an MCPTT private call call-back request to the MCPTT user 2 following procedures in clause 11.1.5.2.1 in ETSI TS 124 379 [9]. Upon successful authorization and forwarding of the request by the originating participating (clause 11.1.5.3.1) Controlling (clause 11.1.5.4) and terminating participating (clause 11.1.5.3.2) MCPTT Client 2 receives the call-back request (clause 11.5.1.2.2) and notifies the User accordingly.

Message Sequence Diagram

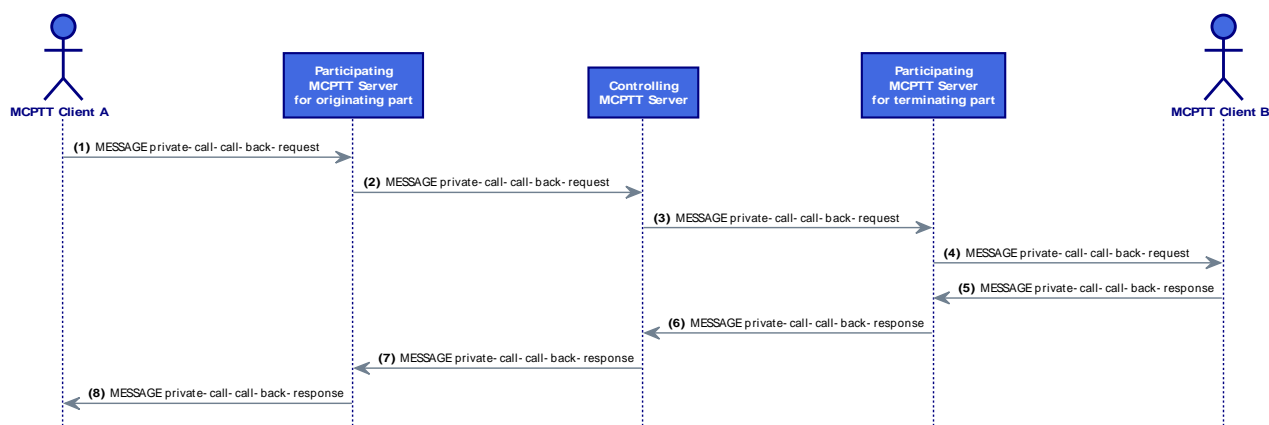


Figure 34: CONN-MCPTT/ONN/CALLBACK/SETUP/01 Message Sequence

Message Details

Trace Pending

Table 43: CONN-MCPTT/ONN/CALLBACK/SETUP/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/CALLBACK/SETUP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) requests a private call call-back to mcptt_id_clientB@example.com
	2	check	SIP MESSAGE received at the MCPTT participating server of User 1
	3	check	The participating server check rules, maps identities and forwards the message to the controlling server
	4	check	The controlling server forwards the MESSAGE to the participating server(s) of the called(s)
	5	check	The terminating participating server re-maps identities and forward the message to the target
	6	check	Client 2 notifies back the response
	7	verify	Call-back registered and User 2 notified

## 7.2.28 MCPTT User cancels a private-call callback [CONN-MCPTT/ONN/CALLBACK/CANCEL-/01]

Upon previous setup of private-call callback (see clause 7.2.27) the original caller initiates the cancellation of the call-back following procedures in clause 11.1.5 in ETSI TS 124 379 [9].

### Message Sequence Diagram

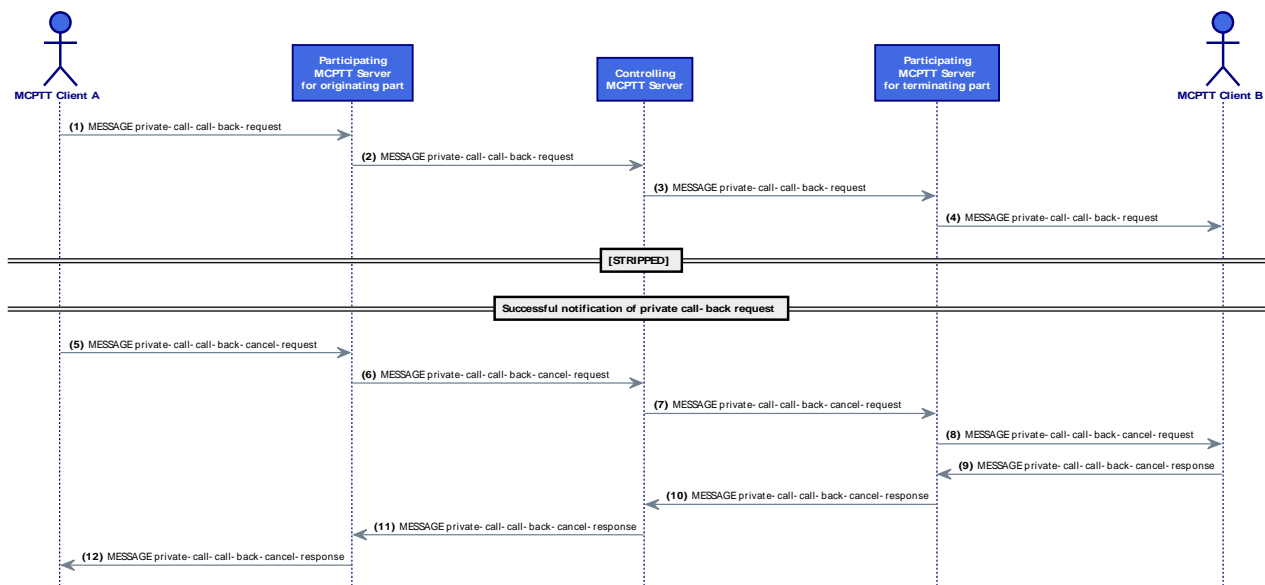


Figure 35: CONN-MCPTT/ONN/CALLBACK/CANCEL/01 Message Sequence

### Message Details

Trace Pending

Table 44: CONN-MCPTT/ONN/CALLBACK/CANCEL/01 ITD

Interoperability Test Description	
<b>Identifier</b>	CONN-MCPTT/ONN/CALLBACK/CANCEL/01
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)</li> <li>MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)</li> </ul>
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>Previous private call call-back received at User 2</li> </ul>

Interoperability Test Description			
Test Sequence	Step	Type	Description
	1	stimulus	User 1 (mcptt_id_clientA@example.com) requests a private call call-back to mcptt_id_clientB@example.com
	2	check	SIP MESSAGE received at the MCPTT participating server of User 1
	3	check	The participating server check rules, maps identities and forwards the message to the controlling server
	4	check	The controlling server forward is the MESSAGE to the participating server(s) of the callee(s)
	5	check	The terminating participating server re-maps identities and forward the message to the target
	6	check	Client 2 notifies back the response
	7	verify	Call-back de-registered and User 2 notified

### 7.2.29 MCPTT User fulfils a private-call callback [CONN-MCPTT/ONN/CALLBACK/FULFIL-/01]

Upon previous setup of private-call callback (see clause 7.2.27) the original callee initiates a private call to the original caller following procedures in clause 11.1.5.2.3 in ETSI TS 124 379 [9].

#### Message Sequence Diagram

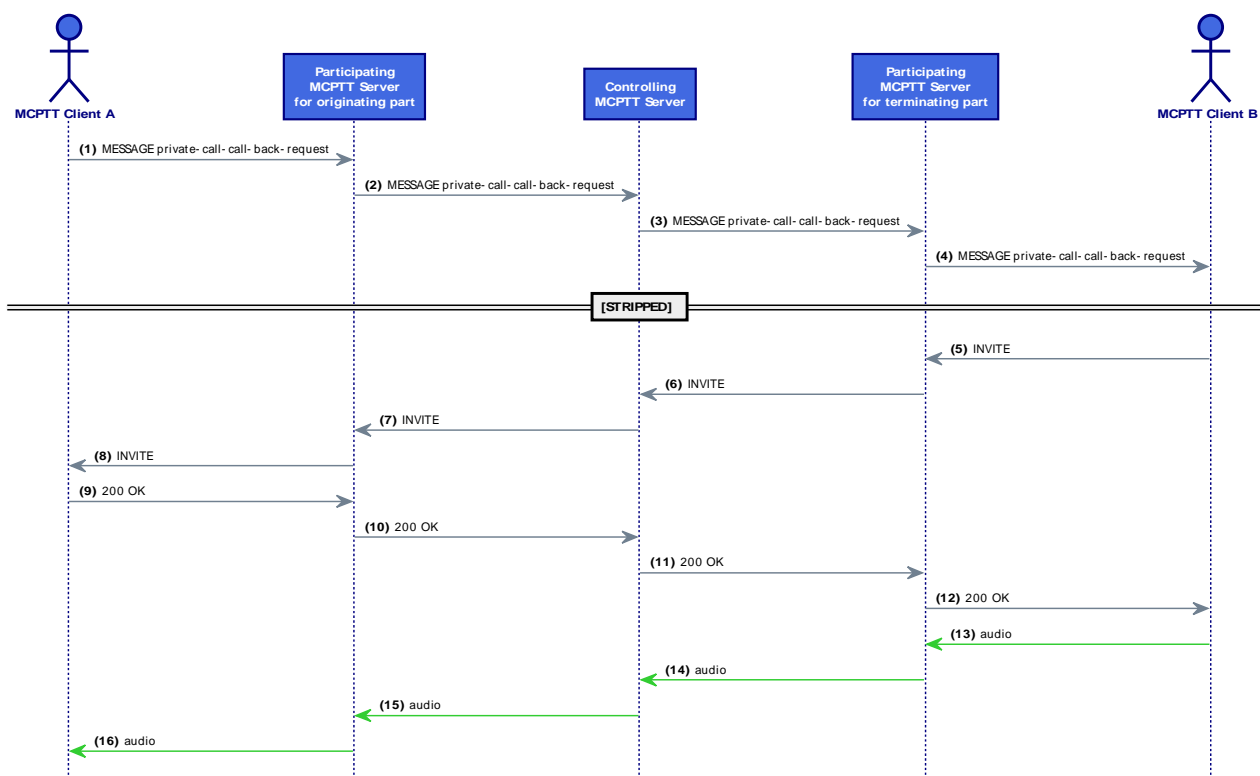


Figure 36: CONN-MCPTT/ONN/CALLBACK/FULFIL-/01 Message Sequence

Message Details

Trace Pending

Table 45: CONN-MCPTT/ONN/CALLBACK/FULFIL/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/CALLBACK/FULFIL/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Previous private call call-back received at User 2</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 2 (mcptt_id_clientB@example.com) requests an on-demand private call in manual commencement mode to mcptt_id_clientB@example.com
	2	check	SIP INVITE received at the MCPTT participating server of User 2
	3	check	Call successfully completed
	4	check	Client 2 changes internal status
	5	verify	Call-back de-registered and User 2 notified



### 7.2.30 MCPTT User setups locally an on-demand ambient listening call [CONN-MCPTT/ONN/AMBIENT/ONDEM/LOCAL/01]

The procedures for ambient listening calls are applicable to both locally initiated and remotely initiated ambient listening call. In this test case an authorized MCPTT user initiates an ambient listening call in order to be listened to by the terminating user. The associated procedures are described in clause 11.1.6.2.1.1 in ETSI TS 124 379 [9]. Being a locally initiated ambient listening call, it shall comply with the conditions for implicit floor control as specified in clause 6.4 in ETSI TS 124 379 [9]. Participating server will follow procedures in clause 11.1.6.3 in ETSI TS 124 379 [9], while Controlling clause 11.1.6.4.

#### Message Sequence Diagram

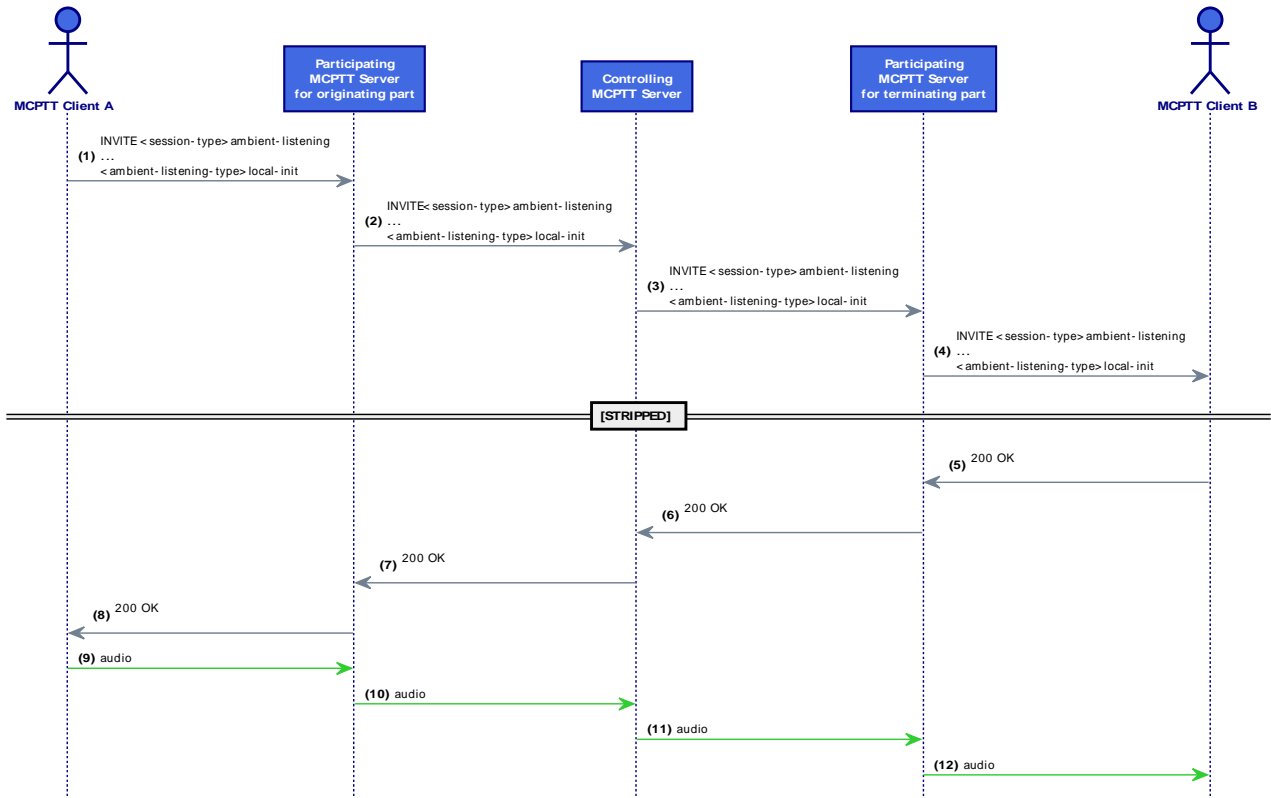


Figure 37: CONN-MCPTT/ONN/AMBIENT/ONDEM/LOCAL/01 Message Sequence

#### Message Details

Trace Pending

Table 46: CONN-MCPTT/ONN/AMBIENT/ONDEM/LOCAL/01 ITD

Interoperability Test Description	
Identifier	CONN-MCPTT/ONN/AMBIENT/ONDEM/LOCAL/01
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a locally initiated ambient listening call
Configuration(s)	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
References	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>

Interoperability Test Description			
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
Test Sequence	Step	Type	Description
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates locally an ambient listening call towards User 2 (mcptt_id_clientB@example.com)
	2	check	Dialog creating INVITE received at the MCPTT participating server of User 1
	3	check	The participating server adapts the mcptt-info accordingly and creates an INVITE to the controlling server
	4	check	The controlling server check permissions and forward the INVITE to the participating server of the callee
	5	check	Upon arrival of the INVITE adapted by the terminating participating function to the terminating Client User 2 is notified
	6	verify	Call connected and ambient listening activated

### 7.2.31 MCPTT User releases locally an on-demand ambient listening call [CONN-MCPTT/ONN/AMBIENT/ONDEM/LOCAL/02]

In this test case an authorized MCPTT user releases an ongoing ambient listening call. The associated procedures are described in clause 11.1.6.2.1.3 in ETSI TS 124 379 [9].

Message Sequence Diagram

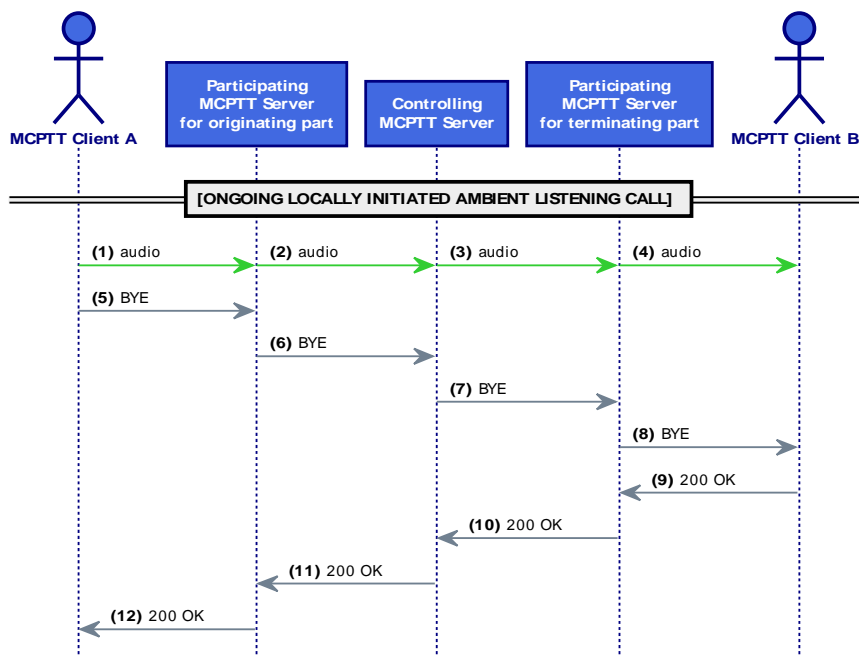


Figure 38: CONN-MCPTT/ONN/AMBIENT/ONDEM/LOCAL/02 Message Sequence

Message Details

Trace Pending

**Table 47: CONN-MCPTT/ONN/AMBIENT/ONDEM/LOCAL/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/AMBIENT/ONDEM/LOCAL/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the release of a locally initiated ambient listening call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	check	Ongoing locally initiated ambient listening call
	2	stimulus	User 1 (mcptt_id_clientA@example.com) releases the ambient listening call
	3	check	BYE sent to the MCPTT participating server of User 1
	4	check	Upon arrival of the BYE User 2 is notified (listening MCPTT user) and 200 OK generated back
	5	verify	Call disconnected, all cache removed and ambient listening deactivated

### 7.2.32 MCPTT User setups locally an ambient listening call using pre-established session [CONN-MCPTT/ONN/AMBIENT/PRE/LOCAL/01]

This test shall verify an ambient listening call locally initiated using pre-established session as defined in clause 11.1.6.2.2 in ETSI TS 123 379 [4].

Similarly to the test in clause 7.2.17 a MCPTT client establishes one or more pre-established sessions to an MCPTT server after SIP registration, and prior to initiating any of the above procedures to other MCPTT users.

For a locally initiated MCPTT ambient listening call using a pre-established session, an MCPTT client shall generate a SIP REFER request outside a dialog in accordance with the procedures specified in ETSI TS 124 229 [6], IETF RFC 4488 [28] and IETF RFC 3515 [25] as updated by IETF RFC 6665 [34] and IETF RFC 7647 [35].

Message Sequence Diagram

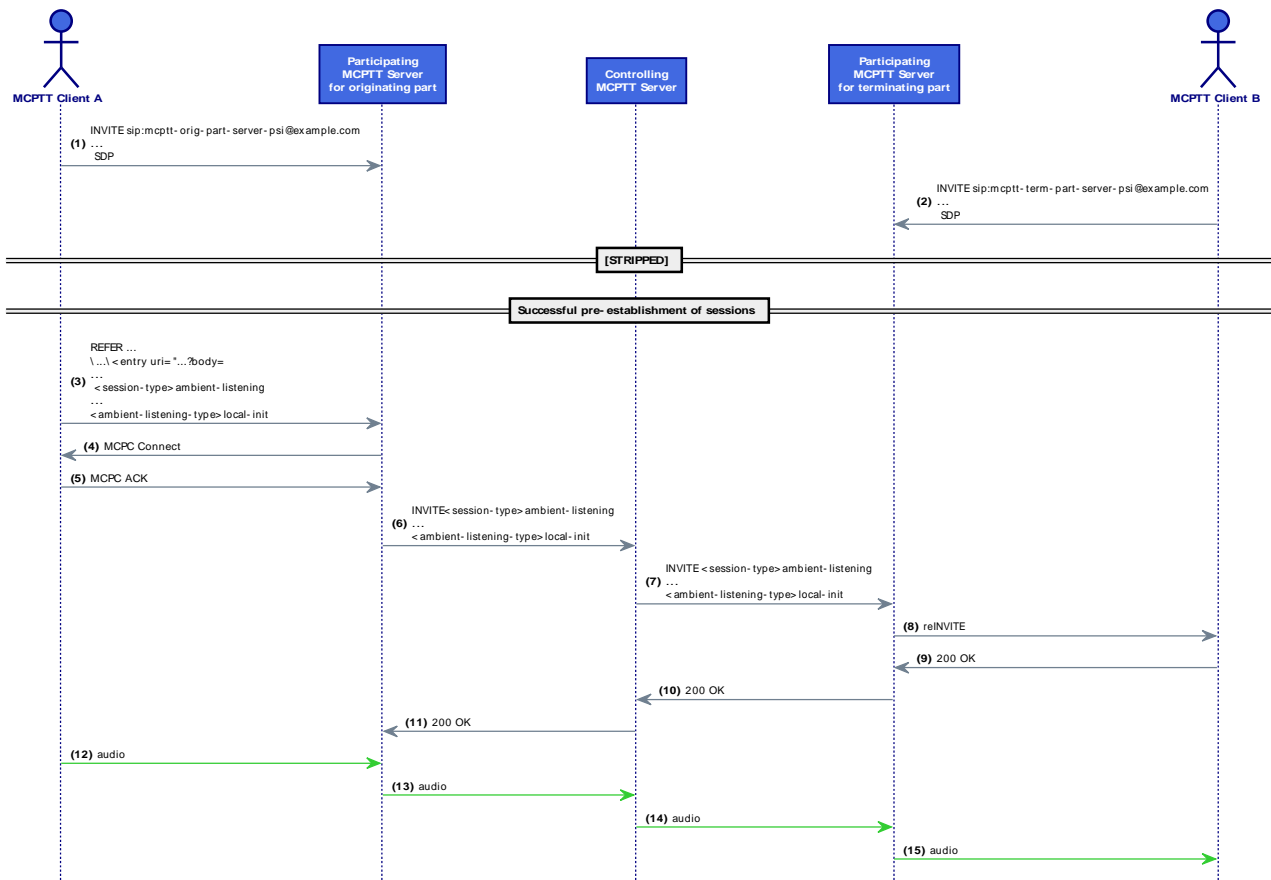


Figure 39: CONN-MCPTT/ONN/AMBIENT/PRE/LOCAL/01 Message Sequence

Message Details

Trace Pending

Table 48: CONN-MCPTT/ONN/AMBIENT/PRE/LOCAL/01 ITD

Interoperability Test Description	
<b>Identifier</b>	CONN-MCPTT/ONN/AMBIENT/PRE/LOCAL/01
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of locally initiated ambient listening call using preestablished sessions
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.8)</li> </ul>
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>

Interoperability Test Description			
Test Sequence	Step	Type	Description
	1	stimulus	The MCPTT clients of User 1 and User 2 pre-establish their respective sessions
	2	check	Sessions pre-established
	3	stimulus	User 1 initiates a locally initiated ambient listening calls to User 2 using pre-established session
	4	check	REFER is created with proper <session-type> set to ambient-listening and <ambient-listening-type> to local-init in the body param of the uri and sent to the participating server of User 1
	5	check	The participating server creates the proper INVITE with data embedded in the REFER and forwards it
	6	check	The controlling server forwards the INVITE to the participating server of the callee and sends a 200 back to the participating of the caller
	7	check	The participating of the caller notifies him/her using MCPC Connect message
	8	check	Similarly Client User 2 is notified with reINVITE and Call automatically accepted
	9	verify	Call connected and ambient listening call activated

### 7.2.33 MCPTT User releases locally an ambient listening call using pre-established session [CONN-MCPTT/ONN/AMBIENT/PRE/LOCAL/02]

This test shall verify the release of an ongoing locally initiated ambient listening call using preestablished session as defined in clause 11.1.6.2.2.3 in ETSI TS 124 379 [9]. Such procedure comprises carrying out the pre-established session release mechanisms using the out-of-dialog REFER as described in clause 6.2.5.2 in ETSI TS 124 379 [9].

Message Sequence Diagram

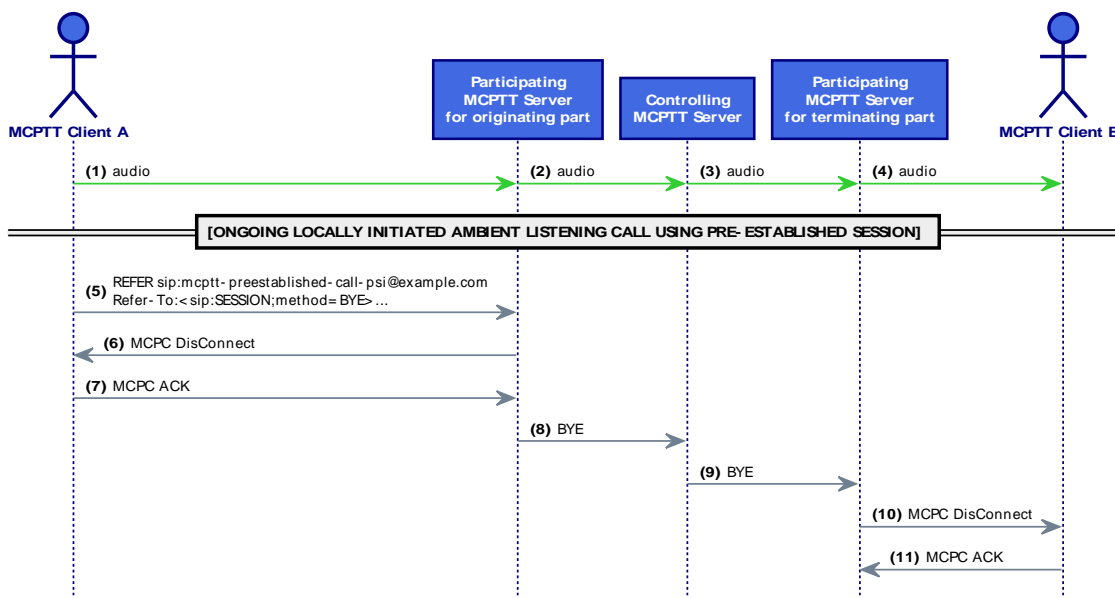


Figure 40: CONN-MCPTT/ONN/AMBIENT/PRE/LOCAL/02 Message Sequence

Message Details

Trace Pending

**Table 49: CONN-MCPTT/ONN/AMBIENT/PRE/LOCAL/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/AMBIENT/PRE/LOCAL/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the release of a locally initiated ambient listening call using pre-established sessions		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	check	On-going locally initiated ambient listening call using pre-established session
	2	stimulus	User 1 releases the locally initiated ambient listening calls to User 2 using pre-established session
	3	check	REFER is created with the BYE properly encoded following pre-established session mechanisms
	4	check	The participating server creates the proper BYE with the data embedded in the REFER and forwards it
	5	check	The controlling server forwards the BYE to the participating server of the callee and sends a 200 back to the participating of the caller
	6	check	The participating of the caller notifies him/her using MCPC (Floor Control) Disconnect message
	7	check	Similarly Client User 2 is notified with MCPC Disconnect
	8	verify	Call disconnected, cache removed and ambient listening deactivated

### 7.2.34 MCPTT User setups remotely an on-demand ambient listening call [CONN-MCPTT/ONN/AMBIENT/ONDEM/REMOTE/01]

The procedures for ambient listening calls. are applicable to both locally initiated and remotely initiated ambient listening call. In this test case an authorized MCPTT user initiates an ambient listening call in order to listen to the terminating user. The associated procedures are described in clause 11.1.6.2.1.1 in ETSI TS 124 379 [9]. Being a locally initiated ambient listening call, it shall comply with the conditions for implicit floor control as specified in clause 6.4 in ETSI TS 124 379 [9]. Participating server will follow procedures in clause 11.1.6.3 in ETSI TS 124 379 [9], while Controlling clause 11.1.6.4 in ETSI TS 124 379 [9].

Note the procedure is the same as in clause 7.2.30 but with <ambient-listening-type> element set to a value of remote-init.

Message Sequence Diagram

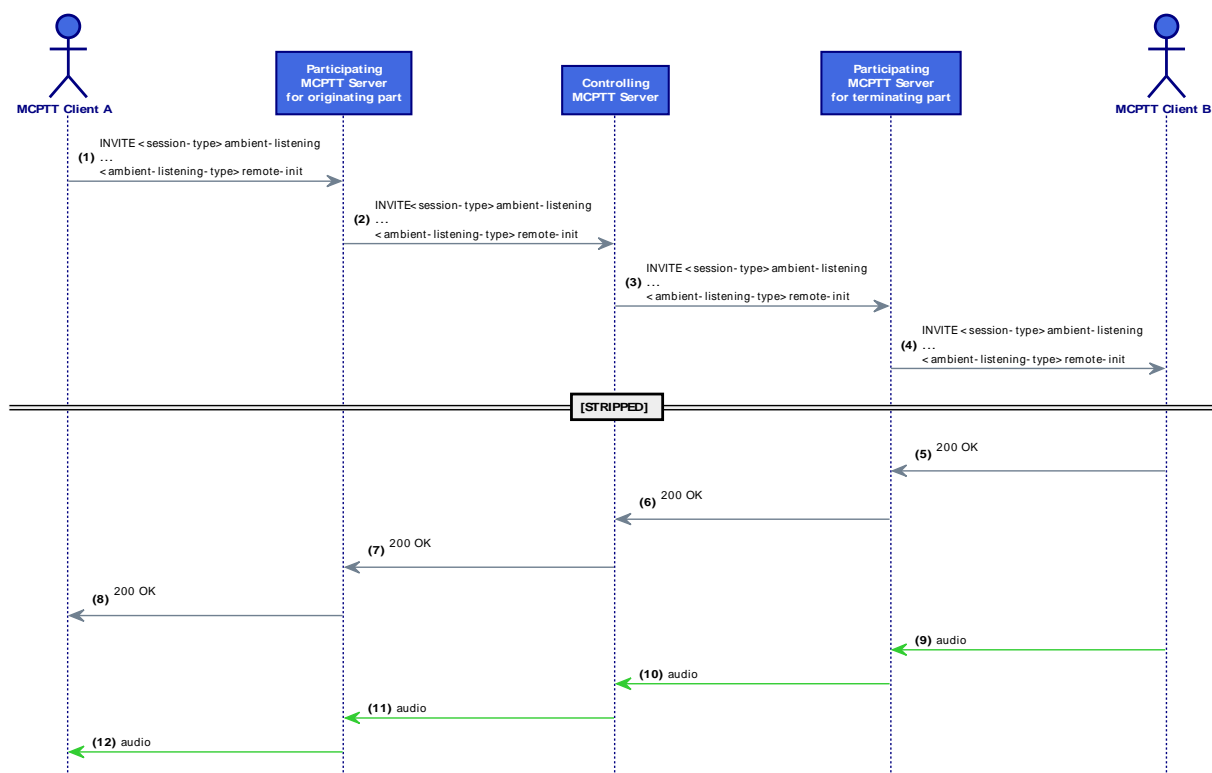


Figure 41: CONN-MCPTT/ONN/AMBIENT/ONDEM/REMOTE/01 Message Sequence

Message Details

Trace Pending

Table 50: CONN-MCPTT/ONN/AMBIENT/ONDEM/REMOTE/01 ITD

Interoperability Test Description	
Identifier	CONN-MCPTT/ONN/AMBIENT/ONDEM/REMOTE/01
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a remotely initiated ambient listening call
Configuration(s)	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
References	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>
Applicability	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)</li> </ul>
Pre-test conditions	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>

Interoperability Test Description			
Test Sequence	Step	Type	Description
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates locally an ambient listening call towards User 2 (mcptt_id_clientB@example.com)
	2	check	Dialog creating INVITE received at the MCPTT participating server of User 1
	3	check	The participating server adapts the mcptt-info accordingly and creates an INVITE to the controlling server
	4	check	The controlling server check permissions and forward the INVITE to the participating server of the callee
	5	check	Upon arrival of the INVITE adapted by the terminating participating function to the terminating Client User 2 is NOT notified and the signalling is completed
	6	verify	Call connected and ambient listening activated

### 7.2.35 MCPTT User releases remotely an on-demand ambient listening call [CONN-MCPTT/ONN/AMBIENT/ONDEM/REMOTE/02]

In this test case an authorized MCPTT user releases an ongoing ambient listening call. The associated procedures are described in clause 11.1.6.2.1.3 in ETSI TS 124 379 [9].

#### Message Sequence Diagram

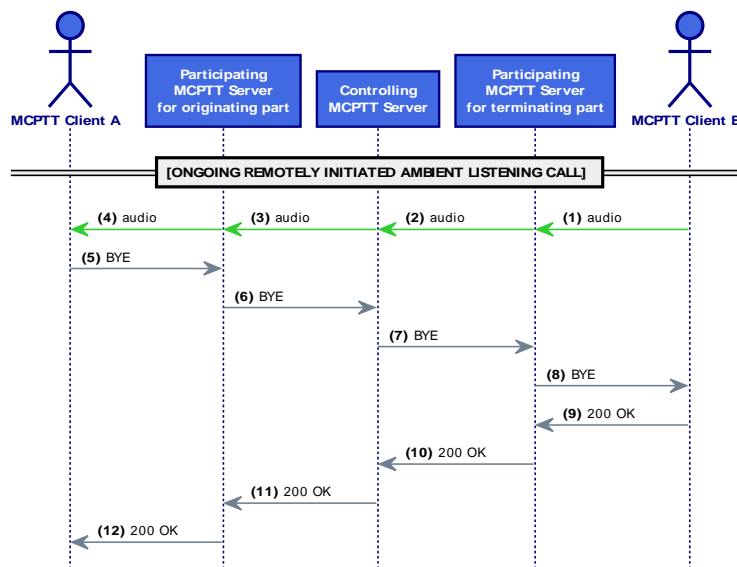


Figure 42: CONN-MCPTT/ONN/AMBIENT/ONDEM/REMOTE/02 Message Sequence

#### Message Details

Trace Pending

Table 51: CONN-MCPTT/ONN/AMBIENT/ONDEM/REMOTE/02 ITD

Interoperability Test Description	
Identifier	CONN-MCPTT/ONN/AMBIENT/ONDEM/REMOTE/02
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the release of a remotely initiated ambient listening call
Configuration(s)	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
References	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>



Interoperability Test Description			
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	check	Ongoing remotely initiated ambient listening call
	2	stimulus	User 1 (mcptt_id_clientA@example.com) releases the ambient listening call
	3	check	BYE sent to the MCPTT participating server of User 1
	4	check	Upon arrival of the BYE User 2 is NOT notified (listened-to MCPTT user) and 200 OK generated back
	5	verify	Call disconnected, all cache removed and ambient listening deactivated

### 7.2.36 MCPTT User setups remotely an ambient listening call using pre-established session [CONN-MCPTT/ONN/AMBIENT/PRE/REMOTE/01]

Equivalent to the test case in clause 7.2.32 but with <ambient-listening-type> set to remote-init.

### 7.2.37 MCPTT User releases remotely an ambient listening call using pre-established session [CONN-MCPTT/ONN/AMBIENT/PRE/REMOTE/02]

Equivalent to the test case in clause 7.2.33 but with <ambient-listening-type> set to remote-init.

### 7.2.38 Remote change of selected group [CONN-MCPTT/ONN/GROUPCHANGE/01]

In this test case an authorized MCPTT user sends a group selection change request to change the selected group of a targeted MCPTT user to a specific MCPTT group following the procedures in clause 10.1.4 in ETSI TS 124 379 [9]. Therefore a SIP MESSAGE is generated, with the <mcpttinfo> element containing the <mcptt-Params> element with the <anyExt> element containing the <mcptt-request-uri> set to the MCPTT group identity to be selected by the targeted MCPTT user and <request-type> element set to a value of "group-selection-change-request". Upon (un)successful affiliation to the requested group the targeted User sends back a SIP MESSAGE with <response-type> element set to a value of "group-selection-change-response" and <selected-group-change-outcome> to success or fail.

Message Sequence Diagram

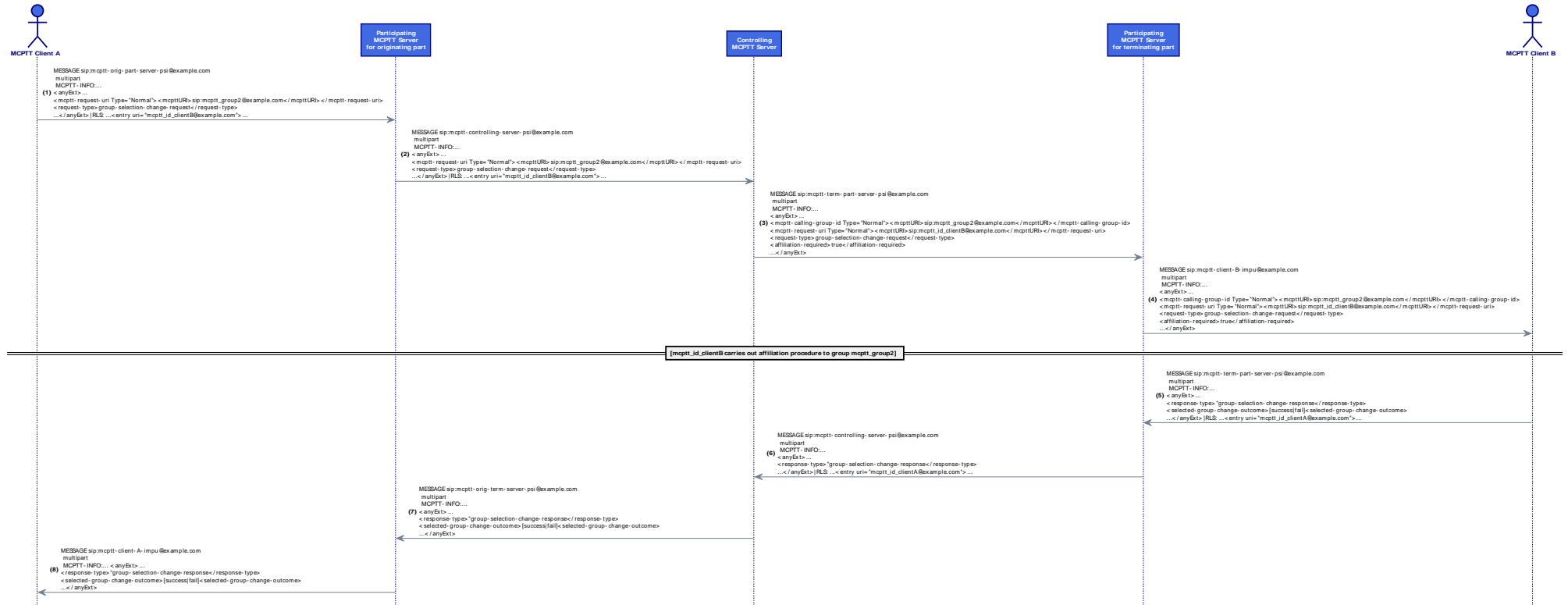


Figure 43: CONN-MCPTT/ONN/GROUPCHANGE/01 Message Sequence

Message Details

Trace Pending

**Table 52: CONN-MCPTT/ONN/GROUPCHANGE/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/GROUPCHANGE/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the request to a targeted user to change affiliated group		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)</li> <li>MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
Test Sequence	Step	Type	Description
	1	stimulus	Authorized User 1 (mcptt_id_clientA@example.com) sends a request to User 2 ((mcptt_id_clientA@example.com) to change group to mcptt_group2@example.com
	2	check	SIP MESSAGE received at the MCPTT participating server of User 1
	3	check	The participating server check rules, maps identities and forwards the message to the controlling server
	4	check	The controlling server forwards the MESSAGE to the participating server of the targeted user
	5	check	The terminating participating server re-maps identities and forward the message to the target
	6	check	Client 2 carries out the affiliation mechanism to the requested group
	7	check	Client 2 sends back the response
	8	verify	MESSAGE received at Client 1 with the result of the request

### 7.2.39 One-to-one standalone SDS over SIP [CONN-MCDATA/ONN/O2O/STANDALONE/SDS-/SIP/01]

This test case describe the submission of a SDS from a MCDATA Client to another one using SIP message according to the procedures described in clauses 6.2.1.1, 6.2.2.1, 6.2.4.1, 15.1.2, 15.1.4, 15.2.7 to 15.2.9, 15.2.11 to 15.2.13, 9.2.2.2.2 in the Client side, 6.3.1.1, 9.2.2.3.1, 9.2.2.4.1, 9.2.2.4.2 and 9.2.2.3.2 in different originating participating, controlling and terminating participating servers respectively in ETSI TS 124 282 [8].

NOTE: Forwarding of 200 OK messages still under discussion.

Message Sequence Diagram

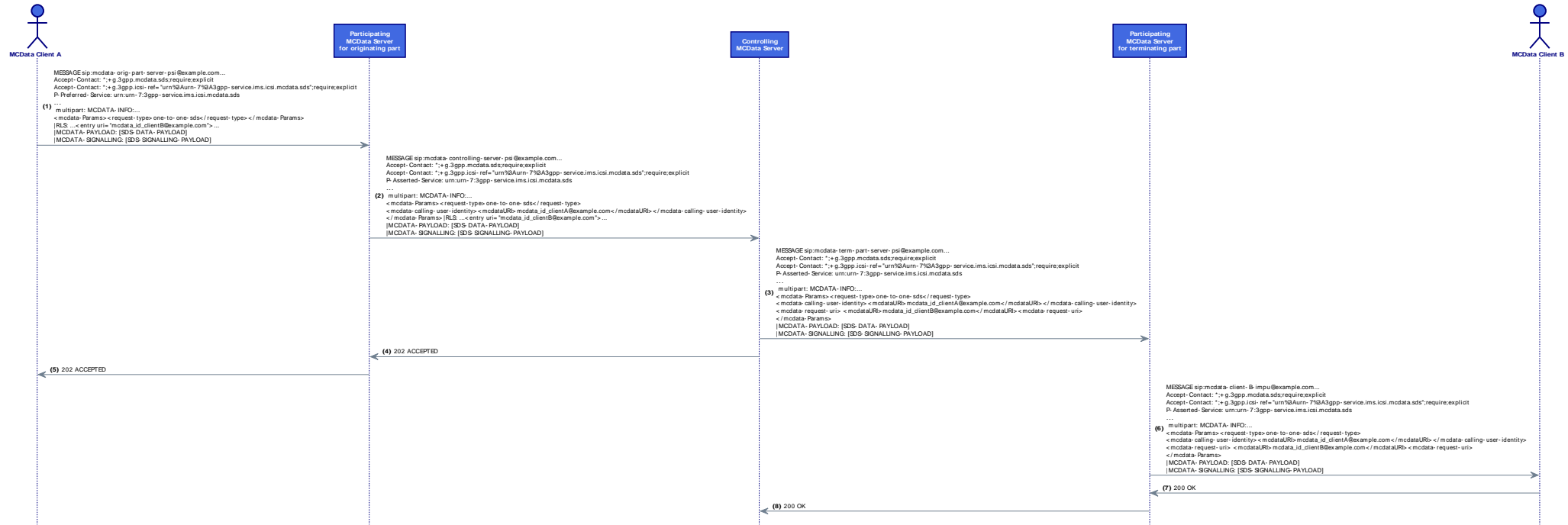


Figure 44: CONN-MCDATA/ONN/O2O/STANDALONE/SDS/SIP/01 Message Sequence

Message Details

Trace Pending

**Table 53: CONN-MCDATA/ONN/O2O/STANDALONE/SDS/SIP/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/ONN/O2O/STANDALONE/SDS/SIP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to send a SDS o2o standalone message		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDData-Client_ONN-MCDData-SDS-SP (clause 6.2)</li> <li>• MCDData-Part_ONN-MCDData-SDS-SP, MCDData-Part_AFFIL (clause 6.7)</li> <li>• MCDData-Ctrl_ONN-MCDData-SDS-SP, MCDData-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcddata_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcddata_id_clientA@example.com) sends a multipart SIP message encapsulating a standalone SDS o2o to User 2
	2	check	SIP message arrives at originating participating
	3	check	SIP message forwarded from the originating to the controlling
	4	check	Controlling sends back 202
	5	check	SIP message forwarded from the controlling to the terminating
	6	verify	SDS o2o standalone message properly received and decoded by User 2 mc-data_id_clientB@example.com

#### 7.2.40 One-to-one standalone SDS over media plane (MSRP) [CONN-MCDATA/ONN/O2O/STANDALONE/SDS/MSRP/01]

This test case describes the submission of a standalone o2o SDS from a MCDData Client to another one with SIP signalling and MSRP using "SIP INVITE request for standalone SDS over media plane for originating participating MCDData function" according to the procedures described in ETSI TS 124 282 [8], clauses 6.3.1.2 and originating participating (clause 9.2.3.3.3), controlling (clause 9.2.3.4) and terminating (clause 9.2.3.3.4) participating servers respectively. Upon successful SIP session establishment the Client sends the SDS message over MSRP using mechanisms defined in clauses 6.1.1, 6.2.1 and 6.3.1 in ETSI TS 124 582 [17]. It is important to remark that, according to clause 5.1 in ETSI TS 124 582 [17] "Data to be transmitted either by the MCDData user media plane shall be transmitted by the MCDData client to the participating MCDData function. The participating MCDData function shall forward the data to the controlling MCDData function. The controlling MCDData function shall distribute the data to the destination MCDData client for one-to-one MCDData service and to the MCDData clients of the affiliated group members for group MCDData service via the participating MCDData functions serving each destination MCDData client". "In the media plane the MCDData client and the controlling MCDData function shall act as MSRP clients. If and when a participating MCDData function is in the communication path as a separate entity between the controlling MCDData function and one or more MCDData clients, it shall act as an MSRP relay". Additionally, according to clause 6.2.1.1 in ETSI TS 124 582 [17] "the media plane is established between the originating MCDData client and the originating participating MCDData function, the originating participating MCDData function and the controlling MCDData function, the controlling MCDData function and the terminating participating MCDData function(s) and each terminating participating MCDData function and the terminating MCDData client(s)". Then, depending on the a=setup attribute been set to "passive" or "active" and relay/client mechanism an empty MSRP send mechanism would be needed to actually activate the session between two MSRP end-points (check IETF RFC 6135 [33]). The diagram in figure 45 illustrates a possible combination.

Message Sequence Diagram

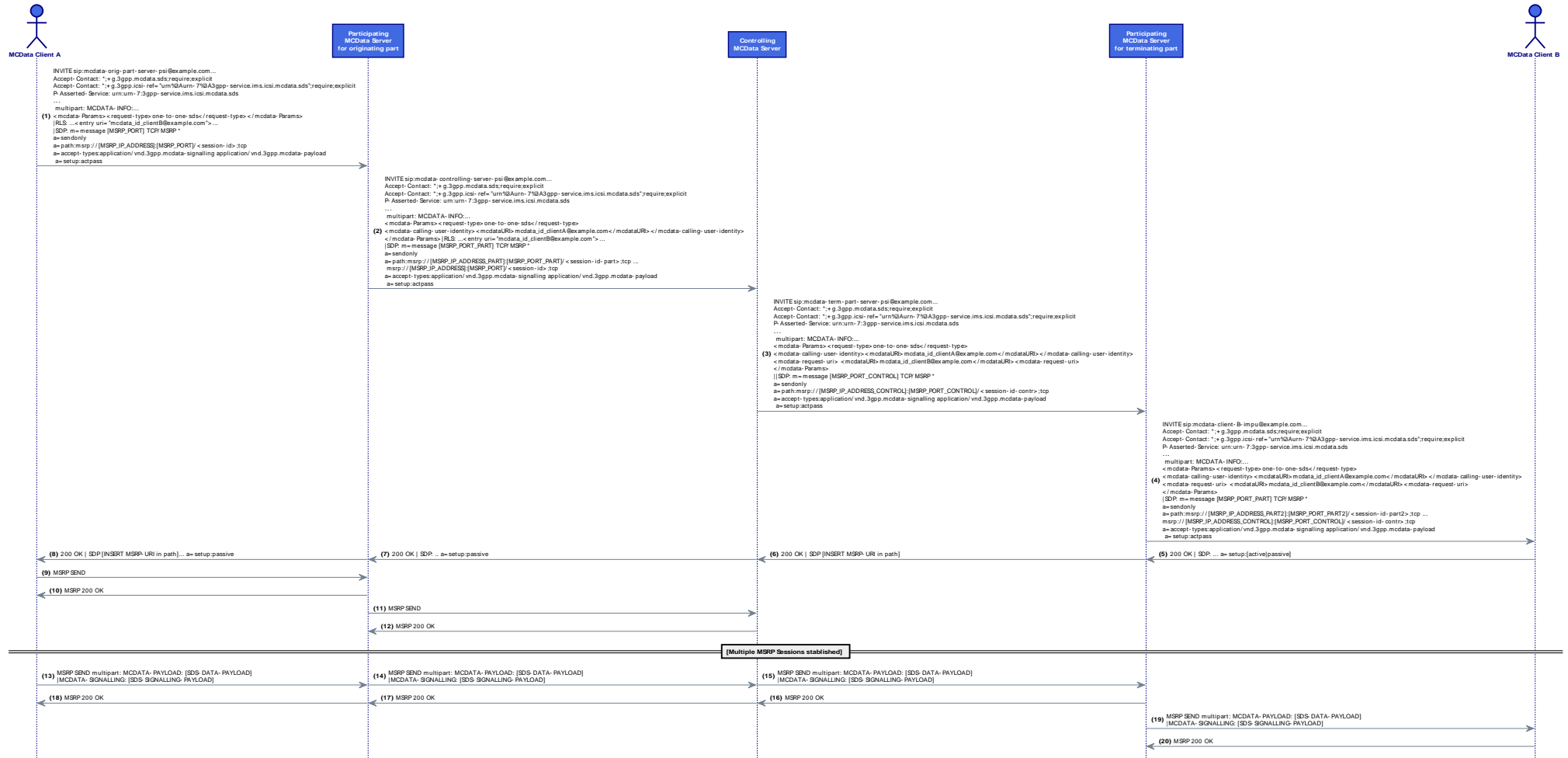


Figure 45: CONN-MCDATA/ONN/O2O/STANDALONE/SDS/MSRP/01 Message Sequence

Message Details

Trace Pending

**Table 54: CONN-MCDATA/ONN/O2O/STANDALONE/SDS/MSRP/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/ONN/O2O/STANDALONE/SDS/MSRP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to send a SDS o2o standalone message		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDATA-Client_ONN-MCDATA-SDS-MP (clause 6.2)</li> <li>• MCDATA-Part_ONN-MCDATA-SDS-MP, MCDATA-Part_AFFIL (clause 6.7)</li> <li>• MCDATA-Ctrl_ONN-MCDATA-SDS-MP, MCDATA-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcddata_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcddata_id_clientA@example.com) sends an INVITE with MSRP information in the SDP
	2	check	SIP INVITE arrives at originating participating
	3	check	SIP INVITE forwarded from the originating to the controlling
	4	check	SIP INVITE forwarded from the controlling to the terminating and from there to User 2
	5	check	SIP session established and associated MSRP information exchanged
	6	verify	SDS o2o standalone message sent to User 2 mcddata_id_clientB@example.com over MSRP

## 7.2.41 One-to-one SDS session [CONN-MCDATA/ONN/O2O/SESSION/SDS/MSRP/01]

Extension of the standalone case in clause 7.2.40 but using the procedures in clause 9.2.4 in ETSI TS 124 282 [8] (including both Client, participating and controlling servers).

Therefore <request-type> will be set to one-to-one-sds-session and specific timers and refresher mechanisms for the session will be set up. Later both ends of the session will be able to use MSRP to send messages.

Refer to clause 7.2.40 for a detailed description of the flows. Figure 46 shows a simplified version for clarity purposes.

Message Sequence Diagram



Figure 46: CONN-MCDATA/ONN/O2O/SESSION/SDS/MSRP/01 Message Sequence



Message Details

Trace Pending

**Table 55: CONN-MCDATA/ONN/O2O/SESSION/SDS/MSRP/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/ONN/O2O/SESSION/SDS/MSRP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to send a SDS o2o session		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDATA-Client_ONN-MCDATA-SDS-MP (clause 6.2)</li> <li>• MCDATA-Part_ONN-MCDATA-SDS-MP, MCDATA-Part_AFFIL (clause 6.7)</li> <li>• MCDATA-Ctrl_ONN-MCDATA-SDS-MP, MCDATA-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcddata_id</li> </ul>		
Test Sequence	Step	Type	Description
	1	stimulus	User 1 (mcddata_id_clientA@example.com) sends an INVITE with MSRP information in the SDP
	2	check	SIP INVITE arrives at originating participating
	3	check	SIP INVITE forwarded from the originating to the controlling
	4	check	SIP INVITE forwarded from the controlling to the terminating and from there to User 2
	5	check	SIP session established and associated MSRP information exchanged
	6	verify	Exchange of SDS messages over the established SDS session using MSRP

## 7.2.42 Group standalone SDS over SIP [CONN-MCDATA/ONN/GROUP/STANDALONE/SDS-/SIP/01]

This test case extends that in clause 7.2.39 but targeting a group rather than a user. Therefore <request-type> will be set to group-sds and, instead of a resource-list document, the <mcdatrequest-uri> element in the mcddata-info will be set to the group identity. Similarly, the procedures are described in ETSI TS 124 282 [8], clauses 6.2.1.1, 6.2.2.1, 6.2.4.1, 15.1.2, 15.1.4, 15.2.7 to 15.2.9, 15.2.11 to 15.2.13, 9.2.2.2.2 in the Client side, 6.3.1.1, 9.2.2.3.1, 9.2.2.4.1, 9.2.2.4.2 and 9.2.2.3.2 in different originating participating, controlling and terminating participating servers respectively. The mechanism is equivalent to that in o2o standalone SDS but, in this case, the controlling will be responsible for forwarding the message to all the group members.

Message Sequence Diagram

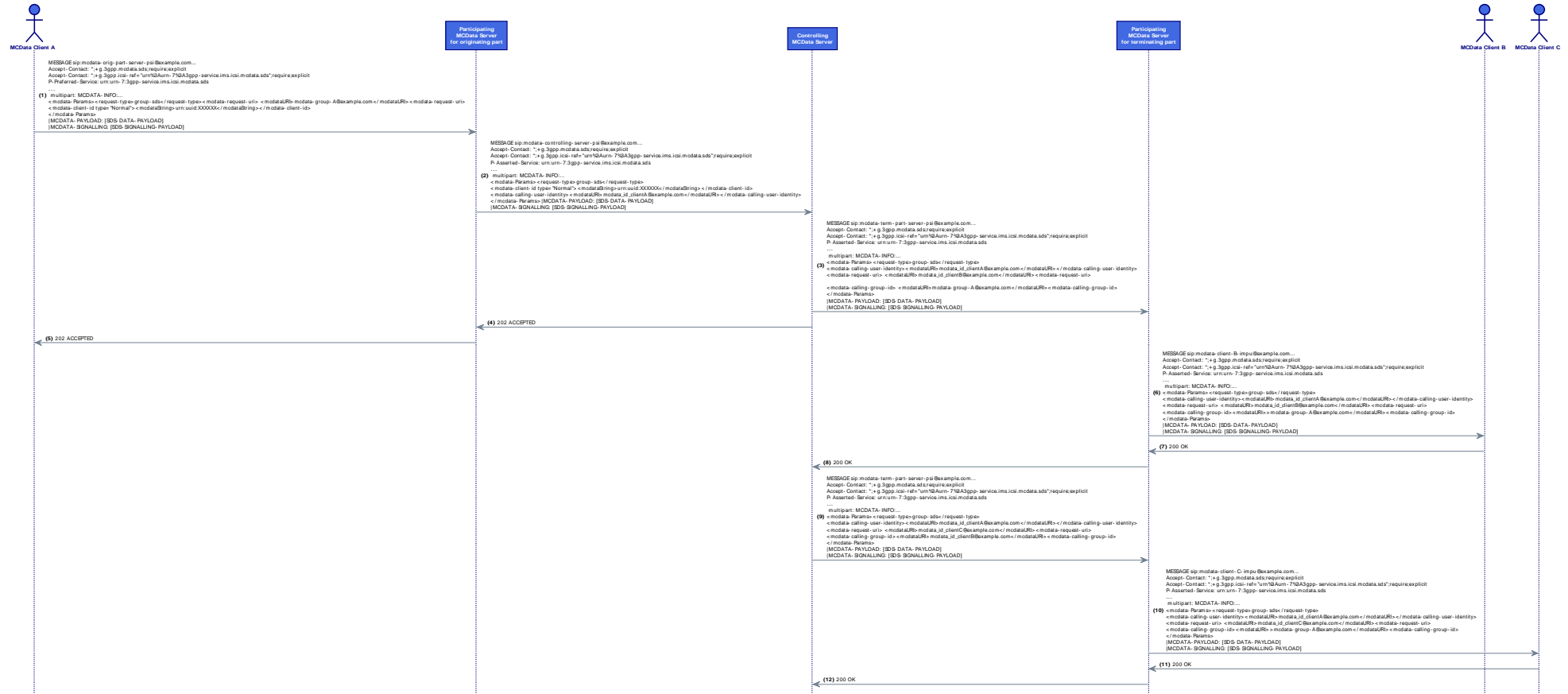


Figure 47: CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/SIP/01 Message Sequence

Message Details

Trace Pending

**Table 56: CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/SIP/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/SIP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to send a SDS group standalone message		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDData-Client_ONN-MCDData-SDS-SP (clause 6.2)</li> <li>• MCDData-Part_ONN-MCDData-SDS-SP, MCDData-Part_AFFIL (clause 6.7)</li> <li>• MCDData-Ctrl_ONN-MCDData-SDS-SP, MCDData-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcddata_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcddata_id_clientA@example.com) sends a multipart SIP message encapsulating a group SDS o2o to User 2
	2	check	SIP message arrives at originating participating
	3	check	SIP message forwarded from the originating to the controlling
	4	check	Controlling sends back 202
	5	check	SIP message forwarded "n" times from the controlling to the terminating responsible for each group member
	6	verify	SDS o2o standalone message properly received and decoded by User 2 mcddata_id_clientB@example.com and User 3 mcddata_id_clientC@example.com

### 7.2.43 Group standalone SDS over media plane (MSRP) [CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/MSRP/01]

This test case extends that in clause 7.2.40 but targeting a group rather than a user. Therefore <request-type> will be set to group-sds and, instead of a resource-list document, the <mcdatrequest-uri> element in the mcddata-info will be set to the group identity. Therefore the MCDData Client sends an SDS over MSRP by setting before a SIP session and exchanging MSRP configuration using "SIP INVITE request for standalone SDS over media plane for originating participating MCDData function" according to the procedures described in ETSI TS 124 282 [8], clauses 6.3.1.2 and originating participating (clause 9.2.3.3.3), controlling (clause 9.2.3.4) and terminating (clause 9.2.3.3.4) participating servers respectively. Upon successful SIP session establishment the Client sends the SDS message over MSRP.

Message Sequence Diagram

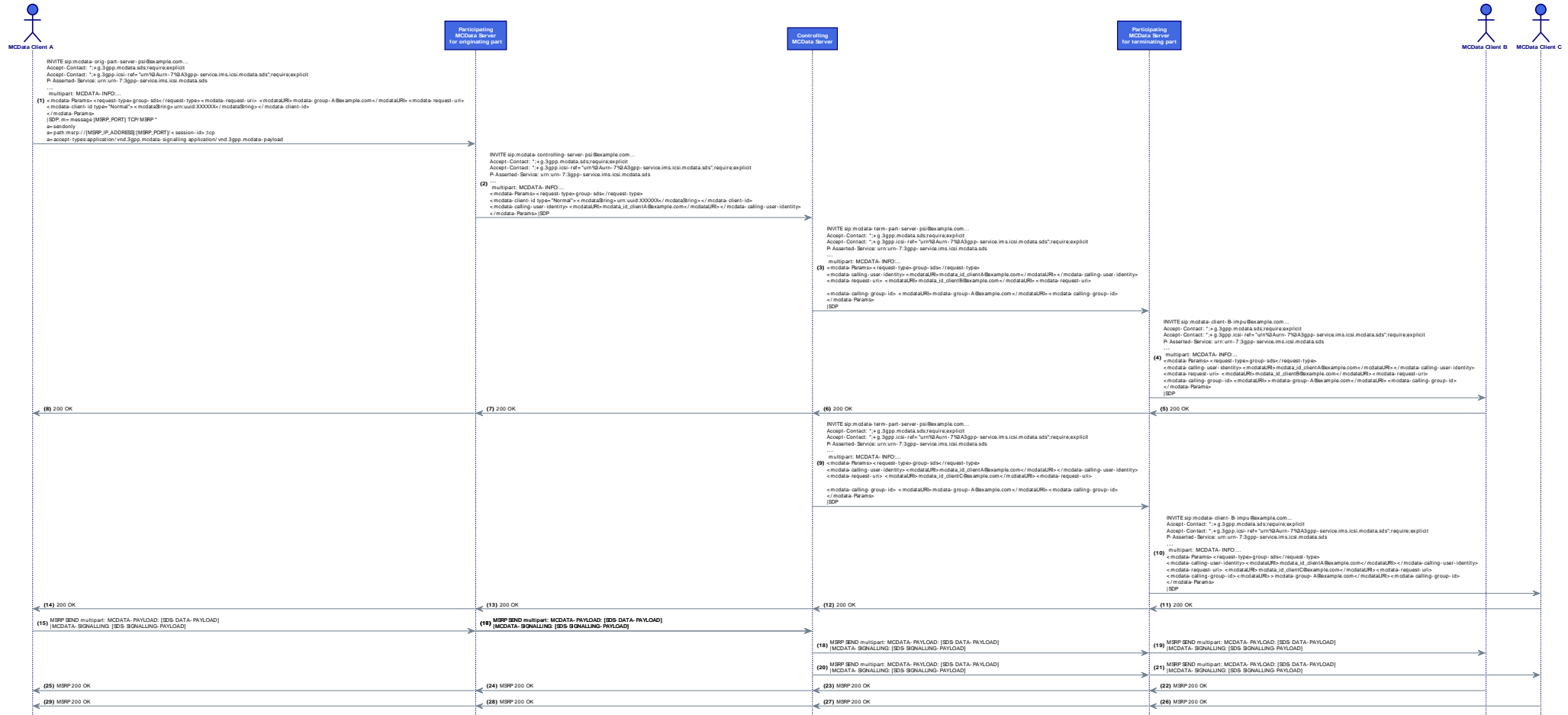


Figure 48: CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/MSRP/01 Message Sequence

Message Details

Trace Pending

**Table 57: CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/MSRP/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/MSRP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to send a SDS group standalone message		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDData-Client_ONN-MCDData-SDS-MP (clause 6.2)</li> <li>• MCDData-Part_ONN-MCDData-SDS-MP, MCDData-Part_AFFIL (clause 6.7)</li> <li>• MCDData-Ctrl_ONN-MCDData-SDS-MP, MCDData-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcddata_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcddata_id_clientA@example.com) sends an INVITE with MSRP information in the SDP
	2	check	SIP INVITE arrives at originating participating
	3	check	SIP INVITE forwarded from the originating to the controlling
	4	check	SIP INVITE forwarded from the controlling to the terminating and from there to User 2 and User 3
	5	check	SIP session established and associated MSRP information exchanged among all ends
	6	verify	SDS group standalone message sent to User 2 and User 3 (mcddata_id_client[B-C]@example.com) over MSRP

## 7.2.44 Group SDS session [CONN-MCDATA/ONN/GROUP/SESSION/SDS/MSRP/01]

Extension of the standalone case in clause 7.2.43 but using the procedures in clause 9.2.4 in ETSI TS 124 282 [8] (including both Client, participating and controlling servers).

Therefore <request-type> will be set to group-sds-session and specific timers and refresher mechanisms for the session will be set up. Later both ends of the session will be able to use MSRP to send messages using mechanisms in clause 6.3.2 in ETSI TS 124 582 [17].

Message Sequence Diagram



Figure 49: CONN-MCDATA/ONN/SESSION/SDS/MSRP/01 Message Sequence

Message Details

Trace Pending

**Table 58: CONN-MCDATA/ONN/GROUP/SESSION/SDS/MSRP/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/ONN/GROUP/SESSION/SDS/MSRP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to establish a SDS group session using MSRP and exchange messages		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDATA-Client_ONN-MCDATA-SDS-MP (clause 6.2)</li> <li>• MCDATA-Part_ONN-MCDATA-SDS-MP, MCDATA-Part_AFFIL (clause 6.7)</li> <li>• MCDATA-Ctrl_ONN-MCDATA-SDS-MP, MCDATA-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcd_data_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcd_data_id_clientA@example.com) sends an INVITE with MSRP information in the SDP
	2	check	SIP INVITE arrives at originating participating
	3	check	SIP INVITE forwarded from the originating to the controlling
	4	check	SIP INVITE forwarded from the controlling to the terminating and from there to User 2 and User 3
	5	check	SIP session established and associated MSRP information exchanged
	6	verify	Exchange of SDS messages over the established SDS session using MSRP

## 7.2.45 One-to-one FD using HTTP [CONN-MCDATA/ONN/O2O/FD/HTTP/01]

This test case deals with the one-to-one file distribution procedure using the HTTP protocol. MCDATA file distribution functionality is divided into four different steps:

- 1) The MCDATA client sender should first learn the absolute URI within the Media Storage Function (MSF) for the file it wants to upload if it does not know it beforehand. SIP MESSAGEs are exchanged between the MCDATA client and the MSF function in the controlling MCDATA server to determine this URI (see clause 10.2.1.3 in ETSI TS 124 282 [8]).
- 2) The MCDATA client establishes a secure connection with the HTTP proxy and uploads the file with a POST request, which is finally forwarded by the HTTP proxy to the MSF function. This element will store the file until the file availability timer expires (see clause 10.2.2 in ETSI TS 124 282 [8]).
- 3) The sender MCDATA client expresses its willingness to transmit the uploaded file to another client in the MCDATA system. A SIP MESSAGE will be used to inform the other endpoint about the URL of the file, so that it can later download it using HTTP. This MESSAGE includes three parts: a mcd\_data-info part with the type of request ('one-to-one-fd'), a resource-lists part with the MCDATA ID of the receiver and a mcd\_data-signalling part with the URL of the file and some metadata (see clause 10.2.4 in ETSI TS 124 282 [8]).
- 4) After receiving the SIP MESSAGE, the receiver is able to contact the MSF to download the file using an HTTP GET request. This will also traverse the HTTP proxy (see clause 10.2.3 in ETSI TS 124 282 [8]).

Message Sequence Diagram

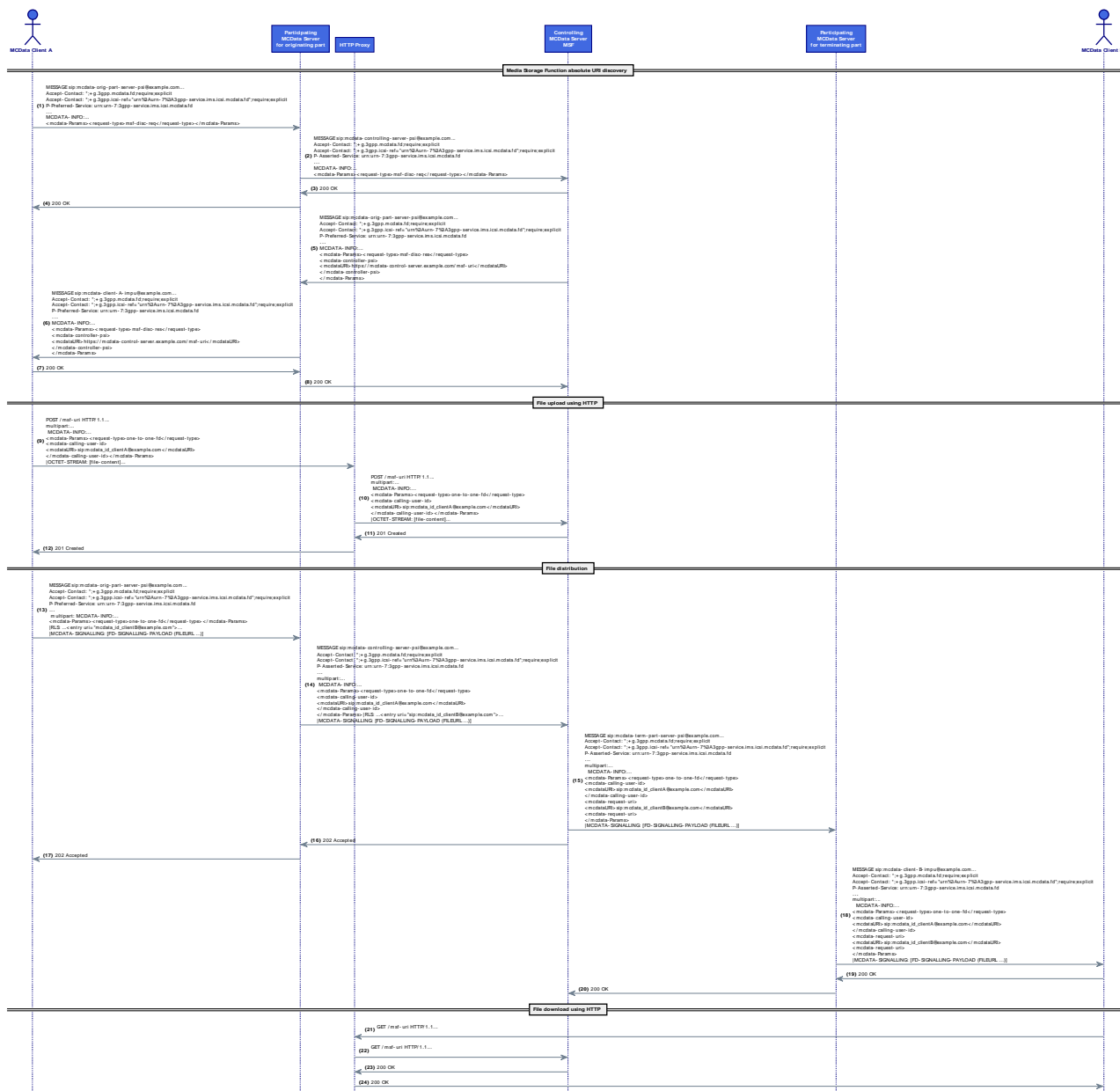


Figure 50: CONN-MCDATA/ONN/O2O/FD/HTTP/01 Message Sequence

Message Details

Trace Pending



## Interoperability Test Description

Table 59: CONN-MCDATA/ONN/O2O/FD/HTTP/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/ONN/O2O/FD/HTTP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and HTTP file distribution		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• HTTP (see IETF RFC 7230 [38])</li> <li>• TLS (see IETF RFC 8446 [39])</li> <li>• SSL (see IETF RFC 6101 [40])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDData-Client_ONN-MCDData-FD-SP (clause 6.2)</li> <li>• MCDData-Part_ONN-MCDData-FD-SP (clause 6.9)</li> <li>• MCDData-Ctrl_ONN-MCDData-FD-SP (clause 6.10)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcdata_id_clientA@example.com) wants to send a file to User 2 (mc-data_id_clientB@example.com)
	2	check	MCDData client tries to discover the absolute URI for the file
	3	check	MESSAGE received at the orig. MCDData participating server
	4	check	The participating server adapts the mcdata-info accordingly and creates a MESSAGE to the controlling server
	5	check	MESSAGE received at the MCDData controlling server
	6	check	The MSF function within the MCDData controlling server creates the URL for the file and responds with another MESSAGE
	7	check	MESSAGE received at the orig. MCDData participating server
	8	check	MESSAGE received at the first MCDData client
	9	check	MCDData client establishes a secure connection with HTTP proxy and uploads the file using HTTP POST
	10	check	HTTP proxy forwards the file to the MSF
	11	check	MCDData client sends an invitation for downloading the file to the other user with a SIP MESSAGE
	12	check	MESSAGE received at the orig. MCDData participating server
	13	check	The participating server adapts the mcdata-info accordingly and creates a MESSAGE to the controlling
	14	check	MESSAGE received at the MCDData controlling server
	15	check	The controlling server checks permissions and forwards the MESSAGE to the participating server of the callee
	16	check	Upon arrival of the MESSAGE adapted by the term. participating function to the terminating Client User 2 is notified
	17	stimulus	User 2 wants to download the file
	18	check	MCDData client establishes a secure connection with the HTTP proxy and downloads the file using HTTP GET

## 7.2.46 Group FD using HTTP [CONN-MCDATA/ONN/GROUP/FD/HTTP/01]

This test case is similar to the one described in clause 7.2.45, but for file distribution to the members of a group. The file URL will be sent to all affiliated members and each one will be responsible for downloading the file from the MSF function. Group file distribution is described in clause 10.2.4 in ETSI TS 124 282 [8].

Message Sequence Diagram

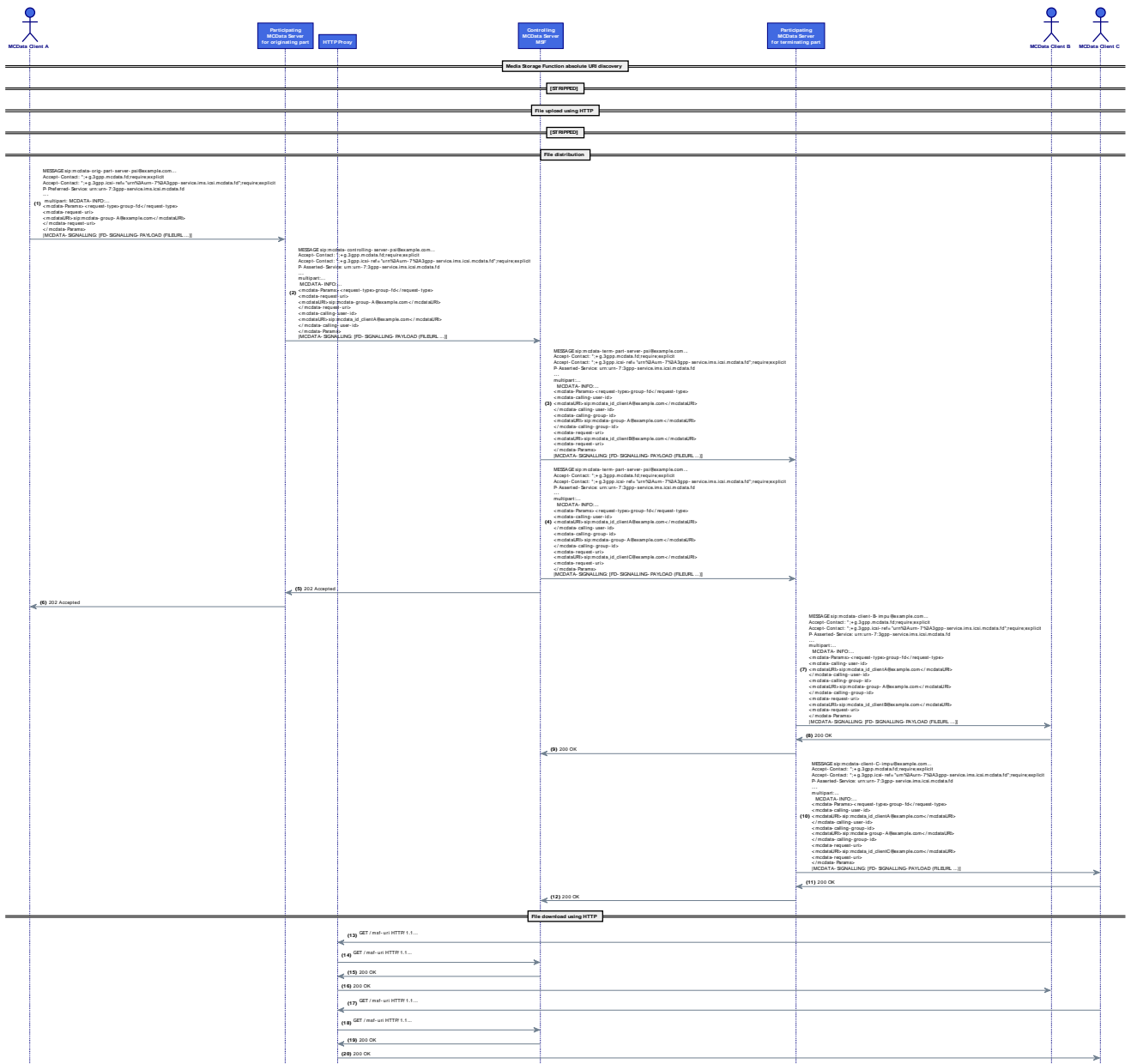


Figure 51: CONN-MCDATA/ONN/GROUP/FD/HTTP/01 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 60: CONN-MCDATA/ONN/GROUP/FD/HTTP/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/ONN/GROUP/FD/HTTP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and HTTP file distribution		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• HTTP (see IETF RFC 7230 [38])</li> <li>• TLS (see IETF RFC 8446 [39])</li> <li>• SSL (see IETF RFC 6101 [40])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDData-Client_ONN-MCDData-FD-SP (clause 6.2)</li> <li>• MCDData-Part_ONN-MCDData-FD-SP, MCDData-Part_AFFIL (clause 6.9)</li> <li>• MCDData-Ctrl_ONN-MCDData-FD-SP, MCDData-Ctrl_GMS (clause 6.10)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcddata_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcddata_id_clientA@example.com) wants to send a file to mcddata-group-A@example.com
	2	check	MCDData client tries to discover the absolute URI for the file
	3	check	MESSAGE received at the orig. MCDData participating server
	4	check	The participating server adapts the mcddata-info accordingly and creates a MESSAGE to the controlling server
	5	check	MESSAGE received at the MCDData controlling server
	6	check	The MSF function within the MCDData controlling server creates the URL for the file and responds with another MESSAGE
	7	check	MESSAGE received at the originating MCDData participating server
	8	check	MESSAGE received at the first MCDData client
	9	check	MCDData client establishes a secure connection with the HTTP proxy and uploads the file with an HTTP POST
	10	check	HTTP proxy forwards the file to the MSF
	11	check	MCDData client sends an invitation for downloading the file to the group with a SIP MESSAGE
	12	check	MESSAGE received at the originating MCDData participating server
	13	check	The participating server adapts the mcddata-info accordingly and creates a MESSAGE to the controlling server
	14	check	MESSAGE received at the MCDData controlling server
	15	check	The controlling server checks permissions, gathers group affiliated members and sends MESSAGEs to the participating servers of all the callees
	16	check	Upon arrival of the MESSAGEs adapted by the terminating participating function to the terminating clients users are notified
	17	stimulus	Member X wants to download the file
	18	check	MCDData client X establishes a secure connection with the HTTP proxy and downloads the file with an HTTP GET

### 7.2.47 One-to-one FD using media plane (MSRP) [CONN-MCDATA/ONN/O2O/FD/MSRP/01]

There is another alternative for distributing files in MCDATA: using the media plane and the MSRP protocol. In this case, MCDATA clients will act as MSRP endpoints, as well as MCDATA controlling servers. Participating servers will have the role of MSRP relay servers. In order to establish a MSRP connection between two users, they will first need to learn the port and connection characteristics. This signalling is also transported in SDP bodies of SIP INVITE requests. There is more information about this feature in clause 10.2.5 in ETSI TS 124 282 [8].

Message Sequence Diagram



Figure 52: CONN-MCDATA/ONN/O2O/FD/MSRP/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 61: CONN-MCDATA/ONN/O2O/FD/MSRP/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/ONN/O2O/FD/MSRP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and file transfer using MSRP		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MSRP (see IETF RFC 4975 [41] and IETF RFC 6135 [33])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDData-Client_ONN-MCDData-FD-MP (clause 6.2)</li> <li>• MCDData-Part_ONN-MCDData-FD-MP (clause 6.9)</li> <li>• MCDData-Ctrl_ONN-MCDData-FD-MP (clause 6.10)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcdata_id_clientA@example.com) wants to send a file to User 2 (mc-data_id_clientB@example.com)
	2	check	Dialog creating INVITE received at the MCDData participating server of User 1
	3	check	The participating server adapts the mcdata-info accordingly and creates an INVITE to the controlling server
	4	check	The controlling server checks permissions and forwards the INVITE to the participating server of the callee
	5	check	Upon arrival of the INVITE adapted by the terminating participating function to the terminating Client User 2 is notified
	6	check	User 2 accepts the file transfer and all the signalling is completed
	7	verify	Call connected and media flows (MSRP) exchanged

## 7.2.48 Group FD using media plane (MSRP) [CONN-MCDATA/ONN/GROUP/FD/MSRP/01]

This test case is similar to the one described in clause 7.2.47, but for file distribution to the members of a group. File transfer invitations will be sent to all affiliated members and the file distribution will be carried out using the MSRP protocol. Group file distribution using the media plane is described in clause 10.2.5 in ETSI TS 124 282 [8].

Message Sequence Diagram

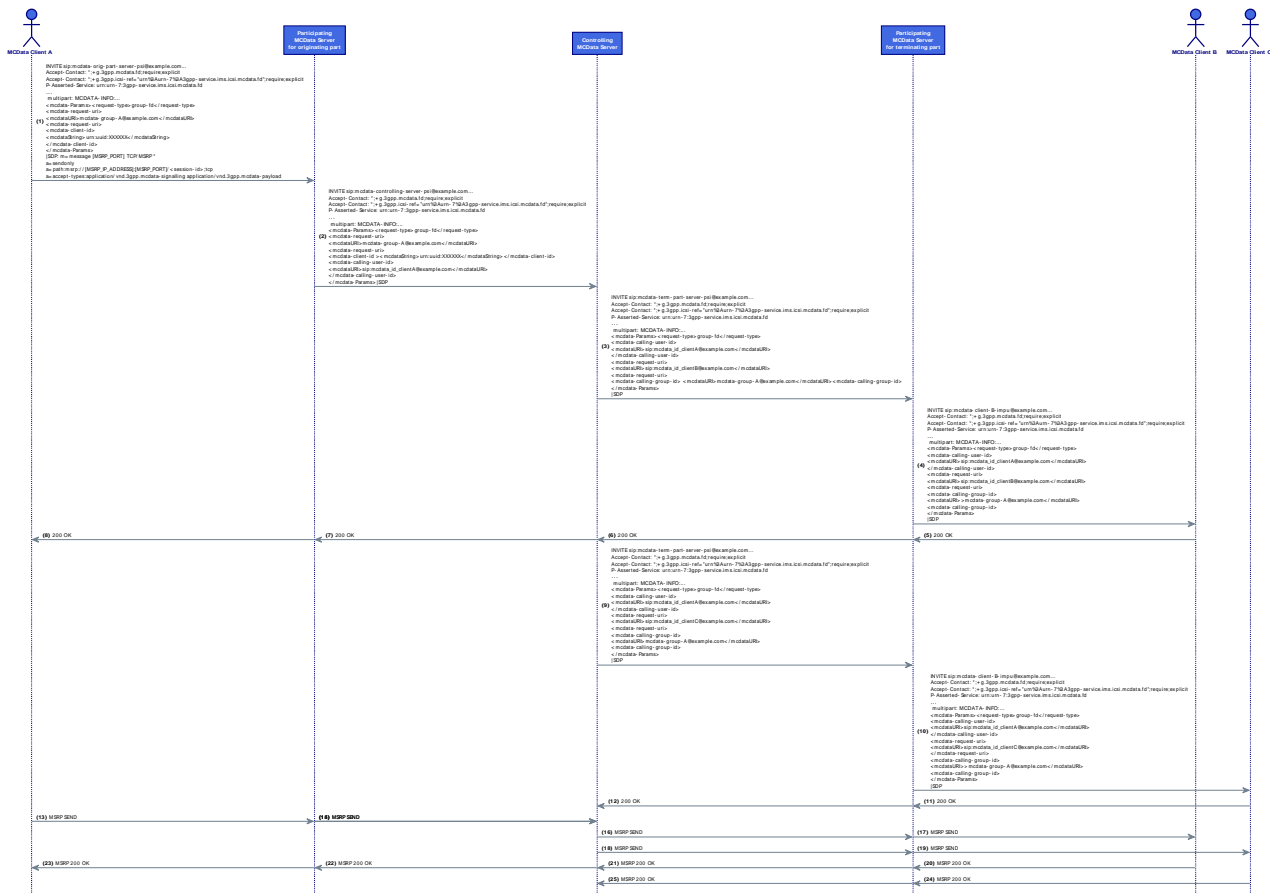


Figure 53: CONN-MCDATA/ONN/GROUP/FD/MSRP/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 62: CONN-MCDATA/ONN/GROUP/FD/MSRP/01 ITD

Interoperability Test Description	
<b>Identifier</b>	CONN-MCDATA/ONN/GROUP/FD/MSRP/01
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and file transfer using MSRP
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MSRP (see IETF RFC 4975 [41] and IETF RFC 6135 [33])</li> </ul>
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDATA-Client_ONN-MCDATA-FD-MP (clause 6.2)</li> <li>• MCDATA-Part_ONN-MCDATA-FD-MP, MCDATA-Part_AFFIL (clause 6.9)</li> <li>• MCDATA-Ctrl_ONN-MCDATA-FD-MP, MCDATA-Ctrl_GMS (clause 6.10)</li> </ul>
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id</li> </ul>

Interoperability Test Description			
Test Sequence	Step	Type	Description
	1	stimulus	User 1 (mcddata_id_clientA@example.com) wants to send a file to mcddata-group-A@example.com
	2	check	Dialog creating INVITE received at the MCDData participating server of User 1
	3	check	The participating server adapts the mcddata-info accordingly and creates an INVITE to the controlling server
	4	check	The controlling server checks permissions, gathers group affiliated members and sends INVITEs to the participating servers of all the callees
	5	check	Upon arrival of the INVITEs adapted by the terminating participating functions to the terminating clients are notified
	6	check	User X accepts the file transfer and all the signalling is completed
	7	verify	Call connected and media flows (MSRP) exchanged

### 7.2.49 Standalone SDS with delivered and read notification [CONN-MCDATA/ONN/DISNOT/SDS/01]

The following test case tries to demonstrate the use of disposition notifications in SDS transmissions. It specifically shows the use of delivered and read notifications, in which the sender explicitly requests to be informed when the other end receives and reads the SDS. This is done by setting the correct value in the 'SDS disposition request type' field of the SDS signalling in SIP MESSAGE requests. This test case only focuses on SDS transmissions over SIP signalling as explained in clause 7.2.39. For SDS transmissions over media plane, please refer to clause 7.2.40 in this same document. Disposition notifications are based on SIP MESSAGEs sent back to the sender of SDSs with the request-type tag of mcddata-info bodies set to 'notify' values. 'Delivered and read' values will be set in 'SDS disposition notification type' fields of SDS notification messages included in mcddata signalling parts of MESSAGE bodies. More information about these procedures can be found in clause 12.2 in ETSI TS 124 282 [8]. This clause just shows the use of disposition notifications in one-to-one standalone SDS transmissions.



Message Sequence Diagram

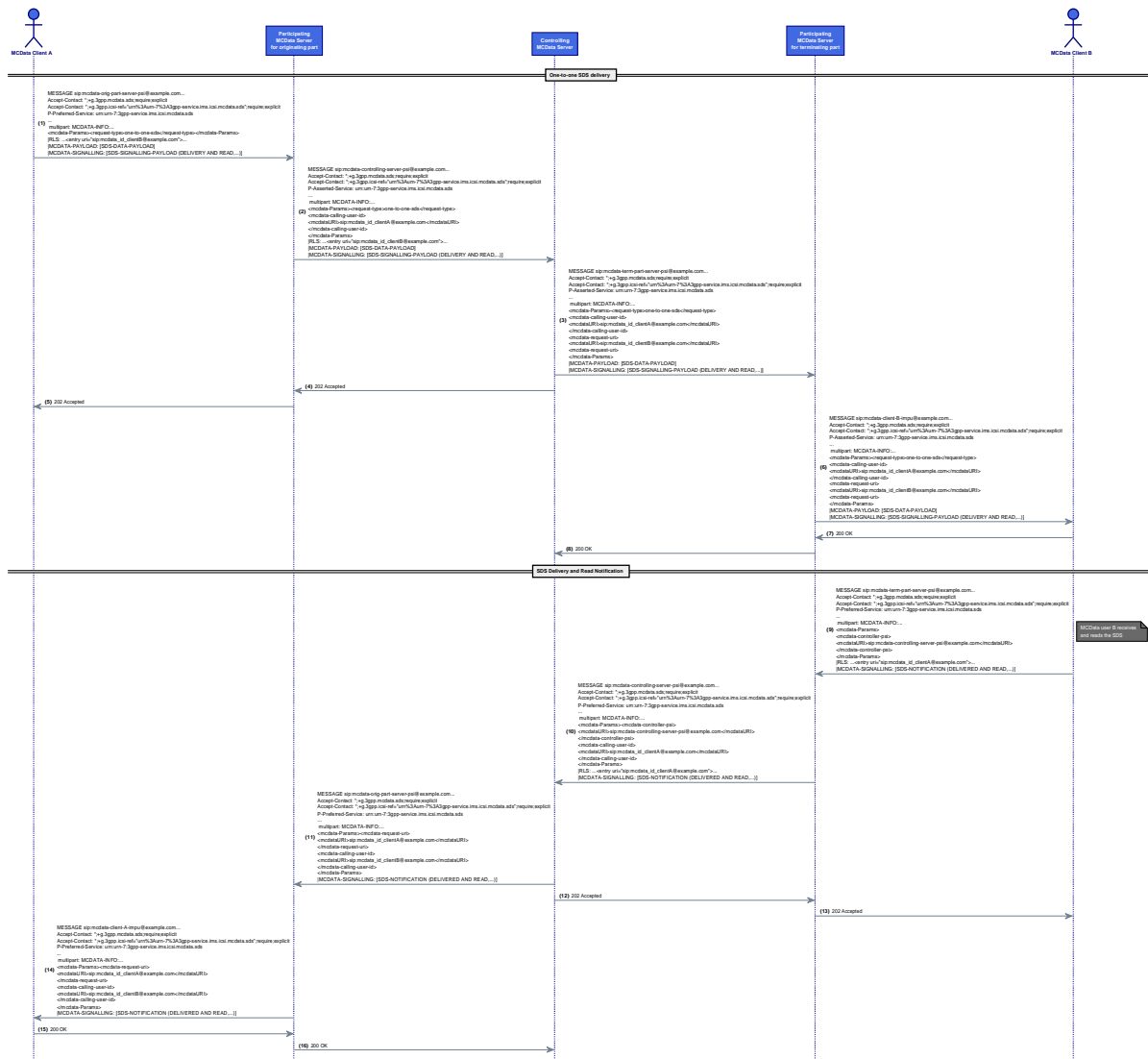


Figure 54: CONN-MCDATA/ONN/DISNOT/SDS/01 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 63: CONN-MCDATA/ONN/DISNOT/SDS/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/ONN/DISNOT/SDS/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to send a SDS o2o standalone message and SDS notification		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDData-Client_ONN-MCDData-SDS-SP (clause 6.2)</li> <li>• MCDData-Part_ONN-MCDData-SDS-SP, MCDData-Part_AFFIL (clause 6.7)</li> <li>• MCDData-Ctrl_ONN-MCDData-SDS-SP, MCDData-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcd_data_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcd_data_id_clientA@example.com) sends a multipart SIP message encapsulating a standalone SDS o2o to User 2
	2	check	SIP message arrives at originating participating
	3	check	SIP message forwarded from the originating to the controlling
	4	check	Controlling sends back 202
	5	check	SIP message forwarded from the controlling to the terminating
	6	verify	SDS o2o standalone message properly received and decoded by User 2 mc-data_id_clientB@example.com
	7	check	MCDData client B sends a disposition notification indicating 'delivered and read' within a SIP message
	8	check	SIP message arrives at terminating participating
	9	check	SIP message forwarded from the terminating to the controlling
	10	check	Controlling sends back 202
	11	check	SIP message forwarded from the controlling to the terminating
	12	verify	SDS disposition notification is correctly decoded in the caller

### 7.2.50 Group standalone SDS with delivered and read notification [CONN-MCDATA/ONN/DISNOT/SDS/02]

This is a similar test case to the one described in clause 7.2.49 but for the group SDS case. Every receiving partner will send back its notification to the sender when the MCDData client receives and the user reads the message.

Message Sequence Diagram



Figure 55: CONN-MCDATA/ONN/DISNOT/SDS/02 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

**Table 64: CONN-MCDATA/ONN/DISNOT/SDS/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/ONN/DISNOT/SDS/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to send a group SDS standalone message and SDS notification		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDData-Client_ONN-MCDData-SDS-SP (clause 6.2)</li> <li>• MCDData-Part_ONN-MCDData-SDS-SP, MCDData-Part_AFFIL (clause 6.7)</li> <li>• MCDData-Ctrl_ONN-MCDData-SDS-SP, MCDData-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcddata_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcddata_id_clientA@example.com) sends a multipart SIP message encapsulating a standalone group SDS to
	2	check	SIP message arrives at originating participating
	3	check	SIP message forwarded from the originating to the controlling
	4	check	Controlling sends back 202
	5	check	SIP message forwarded from the controlling to the terminating
	6	verify	SDS o2o standalone message properly received and decoded by User 2 mc-data_id_clientB@example.com
	7	check	MCDData client B sends a disposition notification indicating 'delivered and read' within a SIP message
	8	check	SIP message arrives at terminating participating
	9	check	SIP message forwarded from the terminating to the controlling
	10	check	Controlling sends back 202
	11	check	SIP message forwarded from the controlling to the terminating
	12	verify	SDS disposition notification is correctly decoded in the caller

### 7.2.51 One-to-one FD using HTTP with file download completed notification [CONN-MCDATA/ONN/DISNOT/FD/01]

The use of disposition notifications for MCDData FD will be tested here. In this case the sender requests the transmission of a notification in the FD SIGNALLING body of the SIP MESSAGE used for the file distribution, so that the sender gets informed when the receiver has completed the file download. The HTTP based file transmission will be only considered in this test case; an analogous procedure to the one described in clause 7.2.45.

Disposition notifications are based on SIP MESSAGEs sent back to the client who has uploaded the file. The request-type tag of mcddata-info bodies in these messages will be set to 'notify' values. 'File download completed' values will be set in 'FD disposition notification type' fields of FD notification messages included in mcddata-signalling parts of MESSAGE bodies. More information about these procedures can be found in clause 12.2 in ETSI TS 124 282 [8]).

This clause just shows the use of disposition notifications in one-to-one file distributions.

Message Sequence Diagram

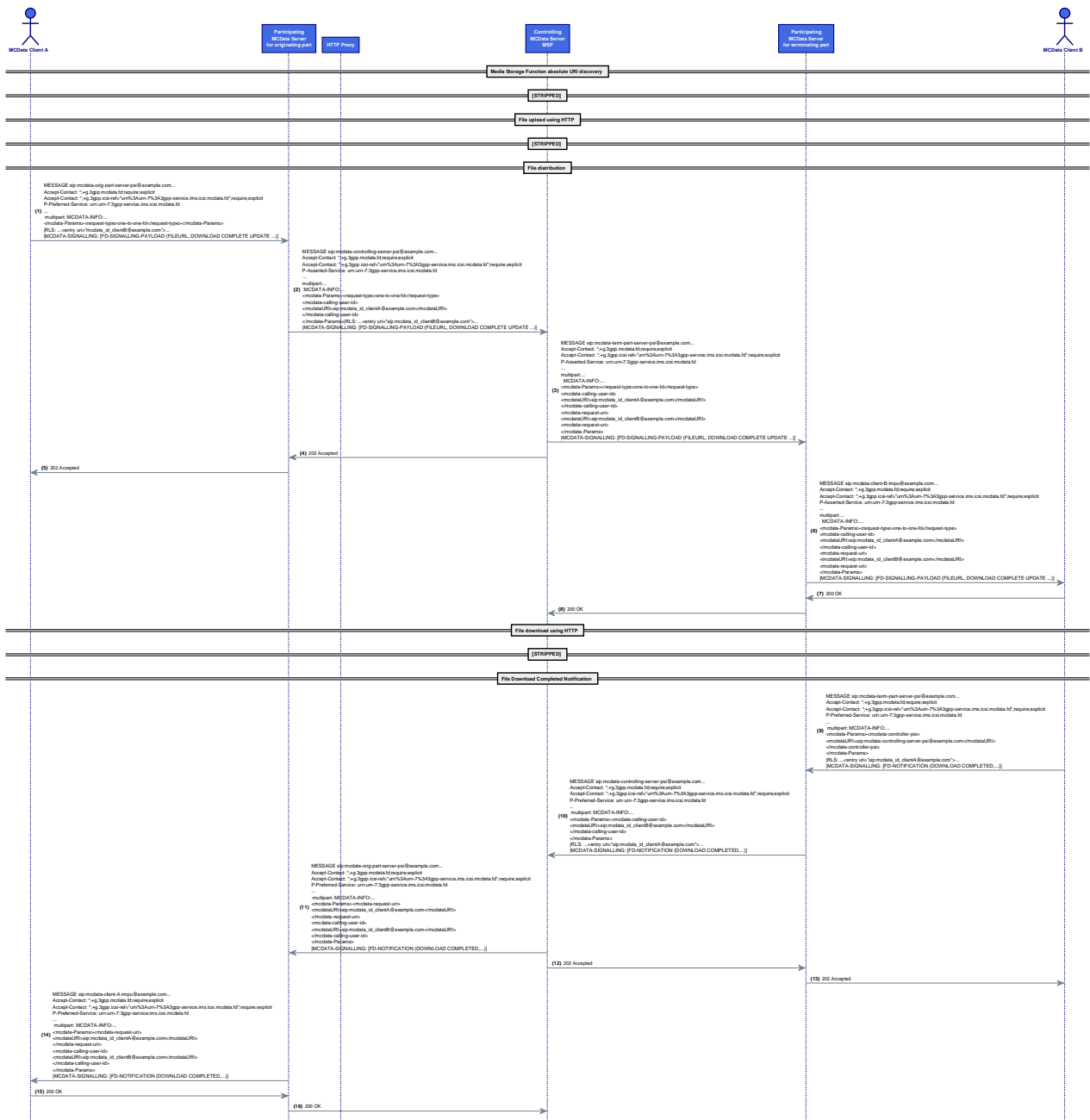


Figure 56: CONN-MCDATA/ONN/DISNOT/FD/01 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 65: CONN-MCDATA/ONN/DISNOT/FD/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/ONN/DISNOT/FD/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, HTTP based FD and FD disposition notification		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• HTTP (see IETF RFC 7230 [38])</li> <li>• TLS (see IETF RFC 8446 [39])</li> <li>• SSL (see IETF RFC 6101 [40])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDATA-Client_ONN-MCDATA-FD-SP (clause 6.2)</li> <li>• MCDATA-Part_ONN-MCDATA-FD-SP (clause 6.9)</li> <li>• MCDATA-Ctrl_ONN-MCDATA-FD-SP (clause 6.10)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcdata_id_clientA@example.com) wants to send a file to User 2 (mc-data_id_clientB@example.com)
	2	check	MCDATA client tries to discover the absolute URI for the file
	3	check	MESSAGE received at the originating MCDATA participating server
	4	check	The participating server adapts the mcdata-info accordingly and creates a MESSAGE to the controlling server
	5	check	MESSAGE received at the MCDATA controlling server
	6	check	The MSF function within the MCDATA controlling server creates the URL for the file and responds with another MESSAGE
	7	check	MESSAGE received at the originating MCDATA participating server
	8	check	MESSAGE received at the first MCDATA client
	9	check	MCDATA client establishes a secure connection with the HTTP proxy and uploads the file with an HTTP POST
	10	check	HTTP proxy forwards the file to the MSF
	11	check	MCDATA client sends an invitation for downloading the file to the other user with a SIP MESSAGE
	12	check	MESSAGE received at the originating MCDATA participating server
	13	check	The participating server adapts the mcdata-info accordingly and creates a MESSAGE to the controlling server
	14	check	MESSAGE received at the MCDATA controlling server
	15	check	The controlling server checks permissions and forwards the MESSAGE to the participating server of the callee
	16	check	Upon arrival of the MESSAGE adapted by the terminating participating function to the terminating Client User 2 is notified
	17	stimulus	User 2 wants to download the file
	18	check	MCDATA client B establishes a secure connection with the HTTP proxy and downloads the file with an HTTP GET
	19	check	MCDATA client B sends a disposition notification indicating 'file download completed' within a SIP MESSAGE
	20	check	SIP MESSAGE arrives at terminating participating
	21	check	SIP MESSAGE forwarded from the terminating to the controlling
	22	check	controlling sends back 202
	23	check	SIP MESSAGE forwarded from the controlling to the originating
	24	verify	FD disposition notification is correctly decoded in the sender

## 7.2.52 Group FD using HTTP with file download completed notification [CONN-MCDATA/DISNOT/FD/02]

This is an analogous test case to the one included in clause 7.2.51 but for the group FD case. Every partner which downloads the file will send back a file download completed notification to the sender when the download process finishes. More details about how to distribute files to groups can be found in clause 10.2 in ETSI TS 124 282 [8]. The procedure to send notifications is explained in ETSI TS 124 282 [8], clause 12.2.

Message Sequence Diagram

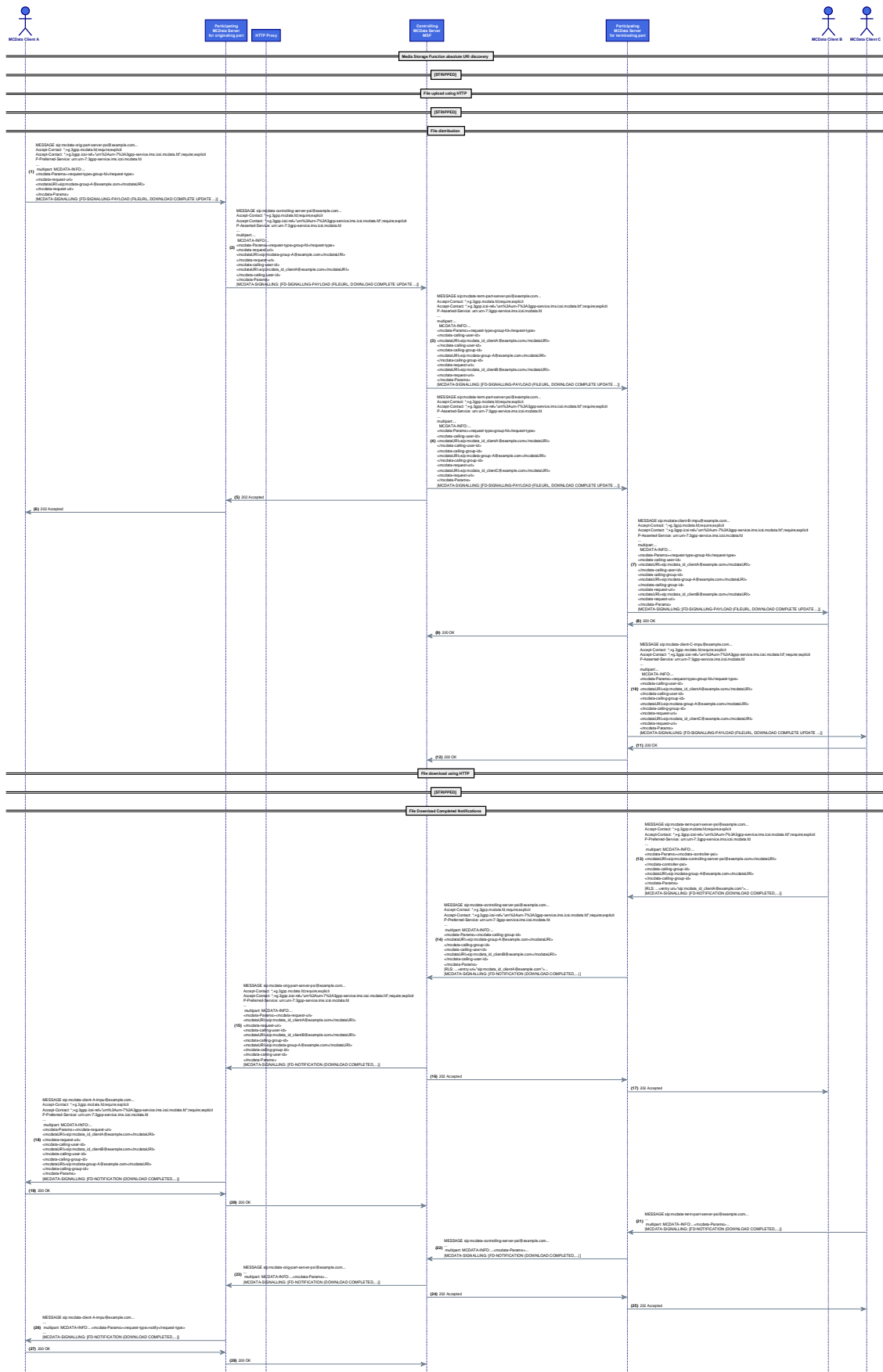


Figure 57: CONN-MCDATA/DISNOT/FD/02 Message Sequence



Message Details

Trace Pending

Interoperability Test Description

**Table 66: CONN-MCDATA/DISNOT/FD/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/DISNOT/FD/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, HTTP based FD and FD disposition notification		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• HTTP (see IETF RFC 7230 [38])</li> <li>• TLS (see IETF RFC 8446 [39])</li> <li>• SSL (see IETF RFC 6101 [40])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDATA-Client_ONN-MCDATA-FD-SP (clause 6.2)</li> <li>• MCDATA-Part_ONN-MCDATA-FD-SP, MCDATA-Part_AFFIL (clause 6.9)</li> <li>• MCDATA-Ctrl_ONN-MCDATA-FD-SP, MCDATA-Ctrl_GMS (clause 6.10)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcddata_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcddata_id_clientA@example.com) wants to send a file to mcddata-group-A@example.com
	2	check	MCDATA client tries to discover the absolute URI for the file
	3	check	MESSAGE received at the originating MCDATA participating server
	4	check	The participating server adapts the mcddata-info accordingly and creates a MESSAGE to the controlling server
	5	check	MESSAGE received at the MCDATA controlling server
	6	check	The MSF function within the MCDATA controlling server creates the URL for the file and responds with another MESSAGE
	7	check	MESSAGE received at the originating MCDATA participating server
	8	check	MESSAGE received at the first MCDATA client
	9	check	MCDATA client establishes a secure connection with the HTTP proxy and uploads the file with an HTTP POST
	10	check	HTTP proxy forwards the file to the MSF
	11	check	MCDATA client sends an invitation for downloading the file to the group with a SIP MESSAGE
	12	check	MESSAGE received at the originating MCDATA participating server
	13	check	The participating server adapts the mcddata-info accordingly and creates a MESSAGE to the controlling server
	14	check	MESSAGE received at the MCDATA controlling server
	15	check	The controlling server checks permissions, gathers group affiliated members and sends MESSAGEs to the participating servers of all the callees
	16	check	Upon arrival of the MESSAGEs adapted by the terminating participating function to the terminating clients users are notified
	17	stimulus	Member X wants to download the file
	18	check	MCDATA client X establishes a secure connection with the HTTP proxy and downloads the file with an HTTP GET
	19	check	MCDATA client X sends a disposition notification indicating 'file download completed' within a SIP MESSAGE
	20	check	SIP MESSAGE arrives at terminating participating
	21	check	SIP MESSAGE forwarded from the terminating to the controlling
	22	check	controlling sends back 202
	23	check	SIP MESSAGE forwarded from the controlling to the originating
	24	verify	FD disposition notification is correctly decoded in the sender

### 7.2.53 Network triggered FD notifications [CONN-MCDATA/NET/FD/01]

When a user uploads a file to be distributed using HTTP protocol as described in clauses 7.2.45 or 7.2.46, the MCDATA client will set a file-availability timer as part of the file metadata in the FD signalling part of the SIP MESSAGE. When this timer expires the controlling MCDATA server is responsible for notifying the users who have not downloaded the file that they will no longer be able to download the file. This is an example of a network triggered FD notification as explained in ETSI TS 124 282 [8], clause 12.4.

Message Sequence Diagram

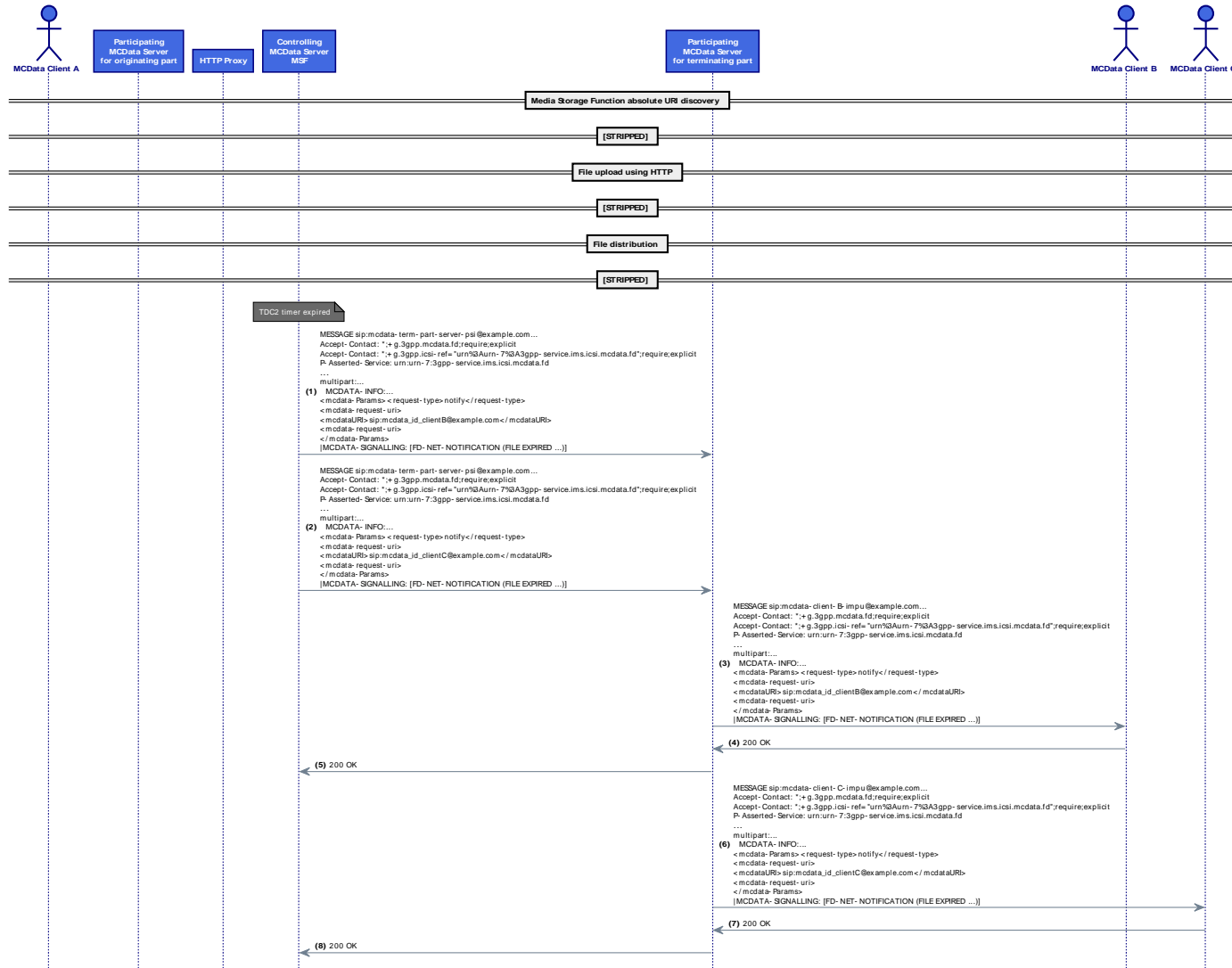


Figure 58: CONN-MCDATA/NET/FD/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 67: CONN-MCDATA/NET/FD/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/NET/FD/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• HTTP (see IETF RFC 7230 [38])</li> <li>• TLS (see IETF RFC 8446 [39])</li> <li>• SSL (see IETF RFC 6101 [40])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDATA-Client_ONN-MCDATA-FD-SP (clause 6.2)</li> <li>• MCDATA-Part_ONN-MCDATA-FD-SP (clause 6.9)</li> <li>• MCDATA-Ctrl_ONN-MCDATA-FD-SP (clause 6.10)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> <li>• Client A has already uploaded a file using HTTP</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	File availability timer TDC2 expires in controlling server
	2	check	Controlling server identifies MCDATA clients which have not downloaded the file
	3	check	Controlling server sends a SIP MESSAGE to the participating server of each MCDATA client
	4	check	SIP MESSAGE contains a 'file expired' network notification
	5	check	Participating server forwards SIP MESSAGE to MCDATA client
	6	check	MCDATA client processes the file expired notification

## 7.2.54 MCVideo User initiates an on-demand private MCVideo call in automatic commencement mode with transmission control [CONN-MCVIDEO/ONN/PRIV/AUTO/ONDEM/WTC/NTC/01]

This test shall verify a pure private automatic on-demand call with transmission control and MCVideo users in the same MC system as defined in clause 7.2.2.3.1 in ETSI TS 123 281 [3]. Specific procedures for private MCVideo calls with transmission control are defined in clause 10.2.2 in ETSI TS 124 281 [7]. The automatic commencement model indicates the terminating Client will take the call without interacting with the User (see IETF RFC 5373 [31] for the message format in the originating User -specially AnswerMode header- and procedures in the terminating User in clause 6.2.3.1.1 in ETSI TS 124 281 [9]).

Message Sequence Diagram

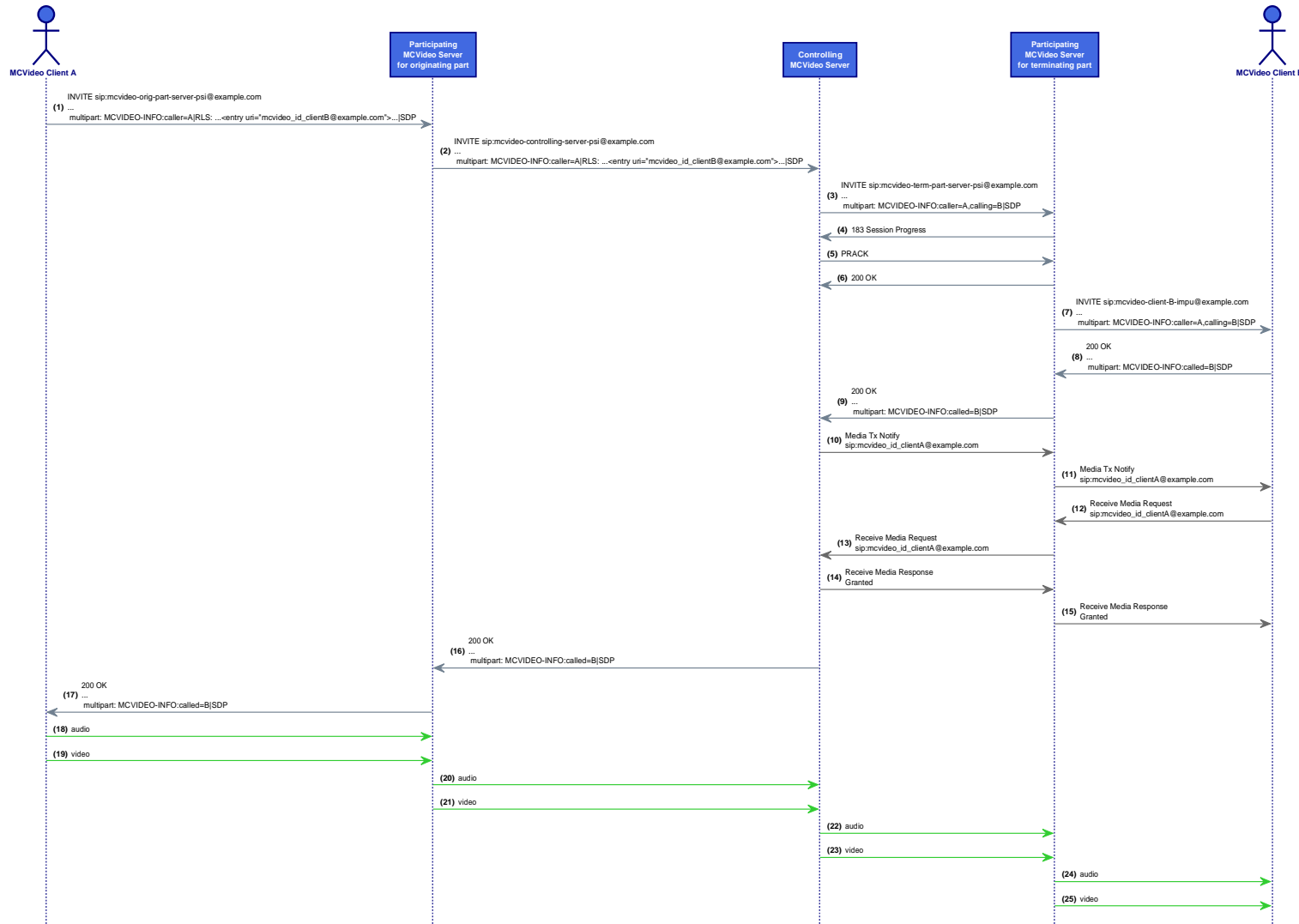


Figure 59: CONN-MCVIDEO/ONN/PRIV/AUTO/ONDEM/WTC/NTC/01 Message Sequence

## Message Details

```
[1] INVITE MCVideo Caller/UE --> MCVideo Participating
INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0 Via: SIP/2.0/UDP IP:PORT;branch=BRANCH
From: <sip:mcvideo-client-A-impu@example.com>;tag=TAG
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:mcvideo-client-A-impu@IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcvideo";+g.3gpp.mcvideo ...
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3
A3gpp-service.ims.icsi.mcvideo";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
[Privacy: id]
P-Preferred-Identity: <sip:mcvideo-client-A-impu@example.com>
Answer-Mode: Auto
Content-Type: multipart/mixed; boundary=[boundary]
--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
<mcvideo-Params>
<session-type>private</session-type>
</mcvideo-Params>
</mcvideoinfo>
--[boundary]
Content-Type: application/resource-lists+xml
<?xml version="1.0" encoding="UTF-8"?>
<resource-lists xmlns="urn:ietf:params:xml:ns:resource-lists" xmlns:cc="
urn:ietf:params:xml:ns:copycontrol">
<list>
<entry uri="mcvideo_id_clientB@example.com" cc:copyControl="to"/> </list>
</resource-lists>
--[boundary]
Content-Type: application/sdp Content-Type: application/sdp
v=0
o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP
t=0 0
m=audio AUDIO_PORT RTP/AVP 105
i=audio component of MCVideo
a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20
a=maxptime:240
m=video VIDEO_PORT RTP/AVP 97
i=video component of MCVideo
a=rtpmap:97 H264/90000
a=fmtp:97 profile-level-id=640c1f;max-fps=3000 a=sendrecv a=direction:both
m=application TC_PORT udp MCVideo a=fmtp:MCVideo
mc_queueing;mc_priority=5;mc_granted;mc_implicit_request ...
--[boundary]--
```

## Interoperability Test Description

**Table 68: CONN-MCVIDEO/ONN/PRIV/AUTO/ONDEM/WTC/NTC/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/PRIV/AUTO/ONDEM/WTC/NTC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with automatic commencement mode		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system.</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) calls User 2 (mcvideo_id_clientB@example.com)
	2	check	INVITE received at participating server of User 1
	3	check	Participating server adapts the mcvideo-info and creates INVITE to controlling server
	4	check	Controlling server forwards INVITE to part. server of callee
	5	check	Upon arrival of the INVITE at User 2 the call is automatically taken
	6	check	Media Tx Notify received at terminating participating server
	7	check	Media Tx Notify received at mcvideo_id_clientB
	8	check	Receiver accepts media with a Receive Media Request
	9	check	Receive Media Request received at participating server
	10	check	Receive Media Request received at controlling server
	11	check	Controlling server sends Receive Media Response with Granted result
	12	check	Receive Media Response received at participating server
	13	check	Receive Media Response received at mcvideo_id_clientB
	14	verify	Call connected and multiple media flows exchanged

### 7.2.55 MCVideo User initiates an on-demand private MCVideo call in automatic commencement mode without transmission control [CONN-MCVIDEO/ONN/PRIV/AUTO/ONDEM/WOTC/01]

This test shall verify a pure MCVideo private automatic on-demand call without transmission control and MCVideo users in the same MC system as defined in clause 7.2.2.3.1 in ETSI TS 123 281 [3] Specific procedures for private calls without transmission control are defined in clause 10.2.3 in ETSI TS 124 281 [7].

More specifically, when the MCVideo user wants to make an on-demand MCVideo private call without transmission control, the MCVideo client shall follow the procedures in clause 10.2.2.2.1 in ETSI TS 124 281 [7] (those shown in clause 7.2.54) but not including any Implicit transmission control mechanism and removing the media-level section for the media transmission control entity.

Message Sequence Diagram

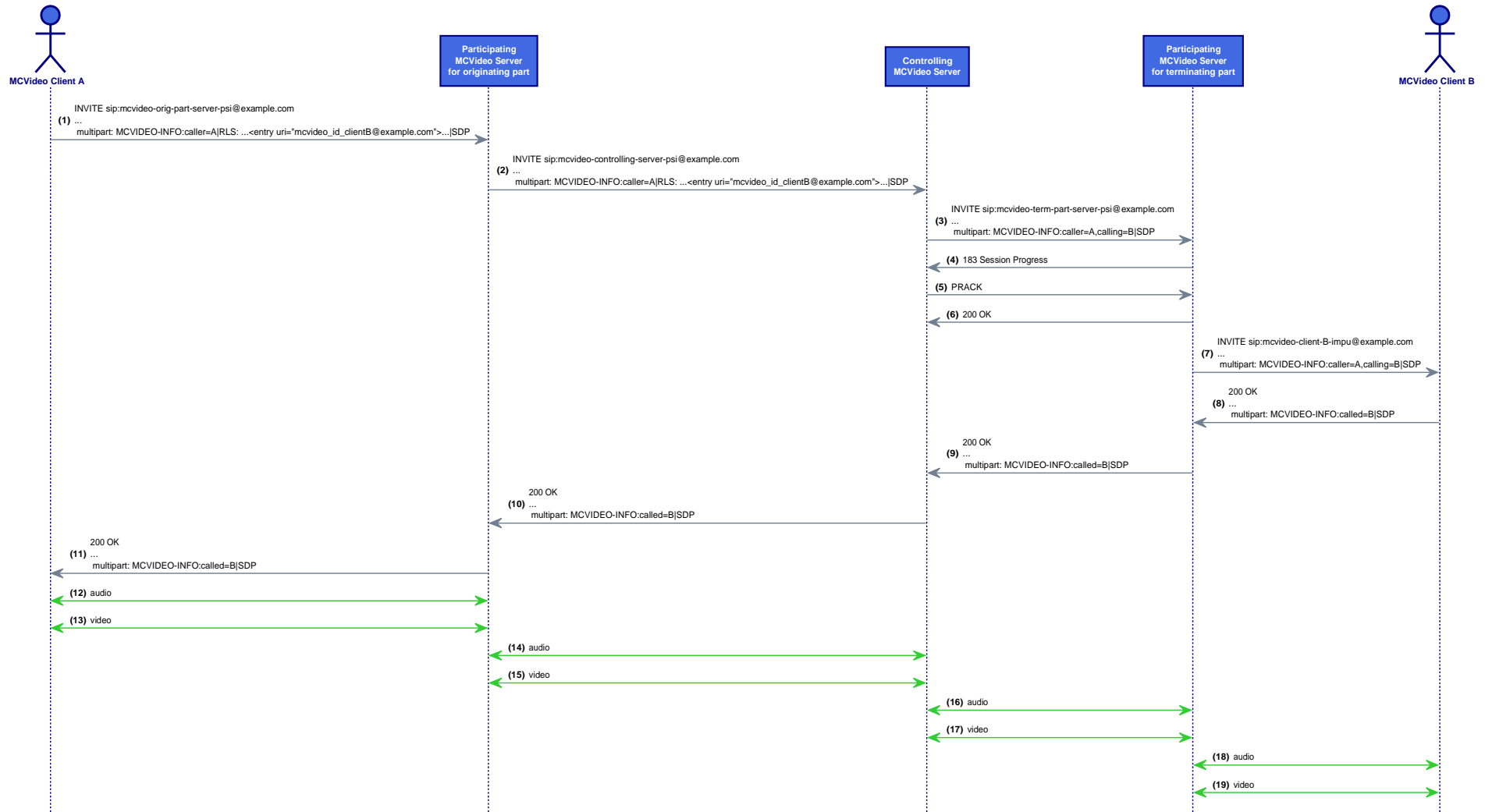


Figure 60: CONN-MCVIDEO/ONN/PRIV/AUTO/ONDEM/WOTC/01 Message Sequence



## Message Details

```

[1] INVITE MCVideo Caller/UE --> MCVideo Participating
INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0
Via: SIP/2.0/UDP IP:PORT;branch=BRANCH
From: <sip:mcvideo-client-A-impu@example.com>;tag=TAG
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:mcvideo-client-A-impu@IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcvideo";+g.3gpp.mcvideo ...
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcvideo";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
[Privacy: id]
P-Preferred-Identity: <sip:mcvideo-client-A-impu@example.com>
Answer-Mode: Auto
Content-Type: multipart/mixed; boundary=[boundary]

--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
<mcvideo-Params>
<session-type>private</session-type>
</mcvideo-Params>
</mcvideoinfo>
--[boundary]

Content-Type: application/resource-lists+xml
<?xml version="1.0" encoding="UTF-8"?>
<resource-lists xmlns="urn:ietf:params:xml:ns:resource-lists" xmlns:cc="
urn:ietf:params:xml:ns:copycontrol">
<list>
<entry uri="mcvideo_id_clientB@example.com" cc:copyControl="to"/> </list>
</resource-lists>
--[boundary]
Content-Type: application/sdp
v=0
o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP
t=0 0
m=audio AUDIO_PORT RTP/AVP 105
a=label:1
i=speech
a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change- neighbor=0; max-red=0
a=ptime:20
a=maxptime:240
m=video VIDEO_PORT RTP/AVP 97
i=video component of MCVideo
a=rtpmap:97 H264/90000
a=fmtp:97 profile-level-id=640c1f;max-fps=3000
a=sendrecv
a=direction:both
==> NOTE: REMOVED LINES
-- m=application TC_PORT udp MCVideo
-- a=fmtp:MCVideo mc_queueing;mc_priority=5;mc_granted;mc_implicit_request
===== ...
--[boundary]

```

## Interoperability Test Description

**Table 69: CONN-MCVIDEO/ONN/PRIV/AUTO/ONDEM/WOTC/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/PRIV/AUTO/ONDEM/WOTC /01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call without transmission control with automatic commencement mode		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system.</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) calls User 2 (mcvideo_id_clientB@example.com)
	2	check	INVITE received at participating server of User 1
	3	check	Participating server adapts the mcvideo-info and creates INVITE to controlling server
	4	check	The controlling server checks permissions and forwards the INVITE to the participating server of the callee
	5	check	Upon arrival of the INVITE adapted by the terminating participating function at User 2 the call is automatically taken
	6	verify	Call connected and bidirectional media flows exchanged

### 7.2.56 MCVideo User initiates an on-demand prearranged MCVideo Group Call [CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/01]

This test comprises the establishment an on-demand prearranged MCVideo Group Call. Apart from SIP signalling transmission control will be also evaluated in this test, as an explicit request from the receiving user is always required to start with the RTP transmission. However just the basic functionality will be tested here. A deeper testing of transmission control procedures will be carried out in specific test cases.

Note that in this test case and following diagrams do not consider the triggering and possible effects of (un)successful implicit affiliation in the MCVideo participating server for the case when the calling is not affiliated to the group identified in the "SIP INVITE request for originating participating MCVideo function" as determined by clause 9.2.2.2.11 in ETSI TS 124 281 [7].

Similarly, unless specified no emergency or imminent peril conditions will be signalled.

Message Sequence Diagram

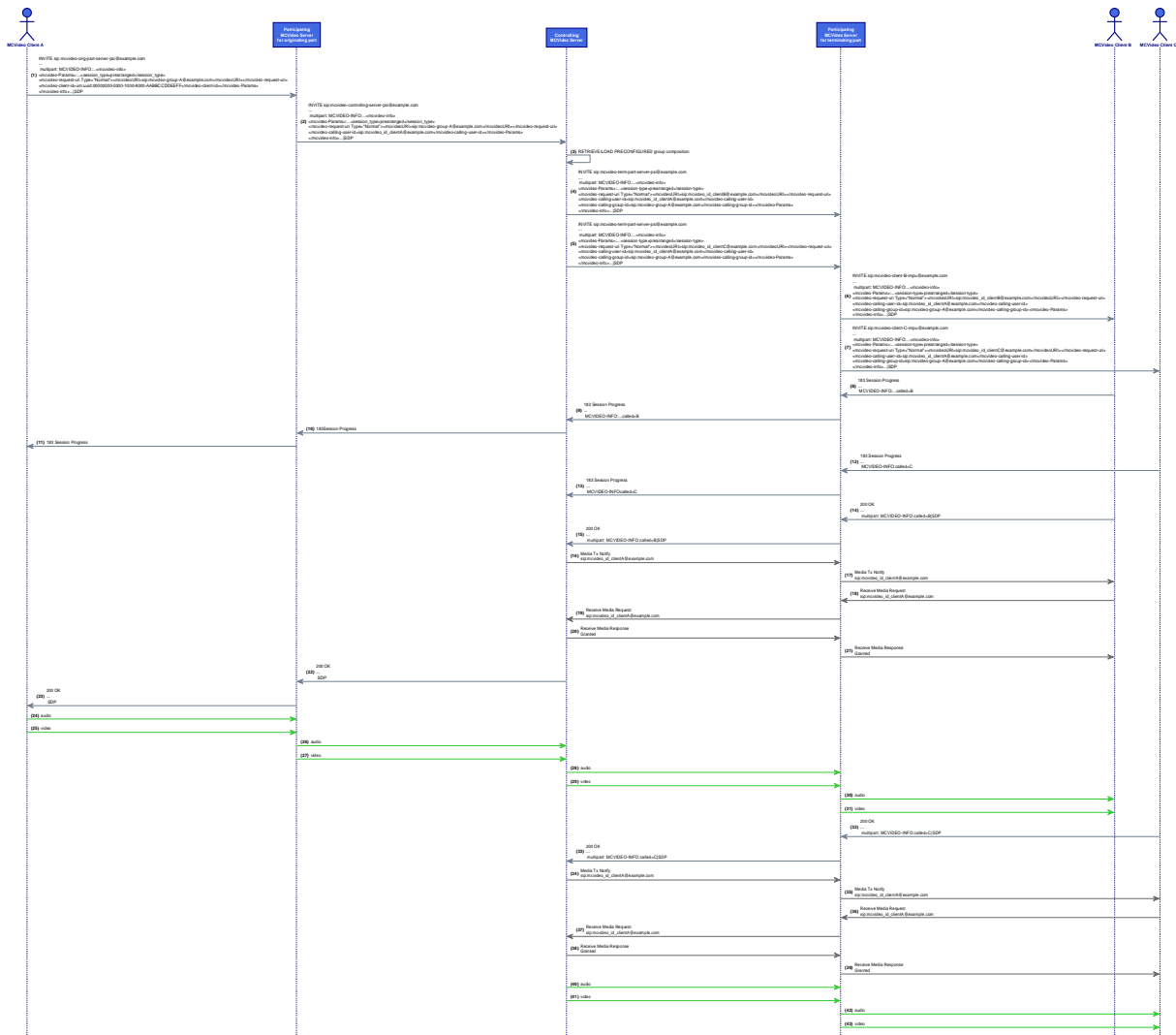


Figure 61: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/01 Message Sequence

Message Details

[1] INVITE MCVideo Caller/UE --> MCVideo Participating

```

INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcvideo";+g.3gpp.mcvideo
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcvideo ";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
P-Preferred-Identity: <sip:mcvideo-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]

--[boundary]
Content-Type: application/sdp
    
```

```

v=0
o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP t=0 0
m=audio AUDIO_PORT RTP/AVP 105
i=audio component of MCVideo
a=rtpmap:105 AMR-WB/16000/1
    
```

```

a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20 a=maxptime:240
m=video VIDEO_PORT RTP/AVP 97
i=video component of MCVideo
a=rtpmap:97 H264/90000 a=fmtp:97 profile-level-id=640c1f;max-fps=3000
a=sendrecv
a=direction:both
m=application TC_PORT udp MCVideo
a=fmtp:MCVideo mc_queueing;mc_priority=5;mc_granted;mc_implicit_request
...

--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
  <mcvideo-Params>
    <session-type>prearranged</session-type>
    <mcvideo-request-uri type="Normal">
      <mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>
    </mcvideo-request-uri>
    <mcvideo-client-id type="Normal">
      <mcvideoString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcvideoString>
    </mcvideo-client-id>
  </mcvideo-Params>
</mcvideoinfo>
--[boundary]
[2] INVITE MCVideo Participating --> MCVideo Controlling
INVITE sip:mcvideo-controlling-server-psi@example.com SIP/2.0
To: <sip:mcvideo-controlling-server-psi@example.com> ...
--[boundary]

Content-Type: application/sdp
...
--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
  <mcvideo-Params>
    <session-type>prearranged</session-type>
    <mcvideo-request-uri type="Normal">
      <mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>
    </mcvideo-request-uri>
    <mcvideo-calling-user-id type="Normal">
      <mcvideoURI>sip:mcvideo_id_clientA@example.com</mcvideoURI>
    </mcvideo-calling-user-id>
  </mcvideo-Params>
</mcvideoinfo>
--[boundary]
...
...

```

## Interoperability Test Description

Table 70: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system</li> <li>• Calling user is affiliated to the called group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) calls mcvideo-group-A
	2	check	INVITE received at participating server of mcvideo_id_clientA@example.com
	3	check	INVITE received at controlling server
	4	check	Controlling server loads the affiliated members of mcvideogroup-A and creates an INVITE per each of the "n" members
	5	check	"n" INVITEs received at participating servers of each mcvideo_id_clientX (where X:1..n)
	6	check	"n" INVITEs received at affiliated mcvideo_id_clientX
	7	check	"n" SIP dialogs established
	8	check	"n" Media Tx Notify received at participating servers
	9	check	"n" Media Tx Notify received at affiliated mcvideo_id_clientX
	10	check	"n" Receivers accept the media with a Receive Media Request
	11	check	"n" Receive Media Request received at participating servers
	12	check	"n" Receive Media Request received at controlling server
	13	check	"n" controlling server sends Receive Media Response with result Granted
	14	check	"n" Receive Media Response received at participating servers
	15	check	"n" Receive Media Response received at each mcvideo_id_clientX
	16	verify	Call connected and multiple media flows exchanged

### 7.2.57 MCVideo User initiates an on-demand prearranged MCVideo Chat Group Call [CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/01]

This test comprises an on-demand chat MCVideo Group Call. As in clause 7.2.56 apart from SIP signalling basic transmission control will be also evaluated. However advanced transmission control mechanisms will be further considered in specific tests.

Similarly, in this test case and following diagrams the triggering and possible effects of (un)successful implicit affiliation (in the MCVideo participating server for the case when the calling is not affiliated to the group identified in the "SIP INVITE request for originating participating MCVideo function") are not considered.

Furthermore, for simplicity purposes no emergency/imminent peril condition shall be signalled either by the initial INVITE or the subsequent ones (one per user joining). Therefore, most of the associated clauses indicated in the clauses 9.2.2.2.1.1, 9.2.2.3.1.1, 9.2.2.3.1.3 and 10.1.2.4.1.1 in ETSI TS 124 281 [7] shall not take effect. The status of the ongoing chat Group Call shall therefore be always no emergency/imminent peril status. As a result, the MCVideo controlling shall NOT send INVITE requests to the affiliated but not joined members of the chat MCVideo group neither re-INVITE to the affiliated and joined ones.

The effect of (un)successful implicit affiliation, limitation on maximum number of users or ongoing sessions is not considered.

Message Sequence Diagram

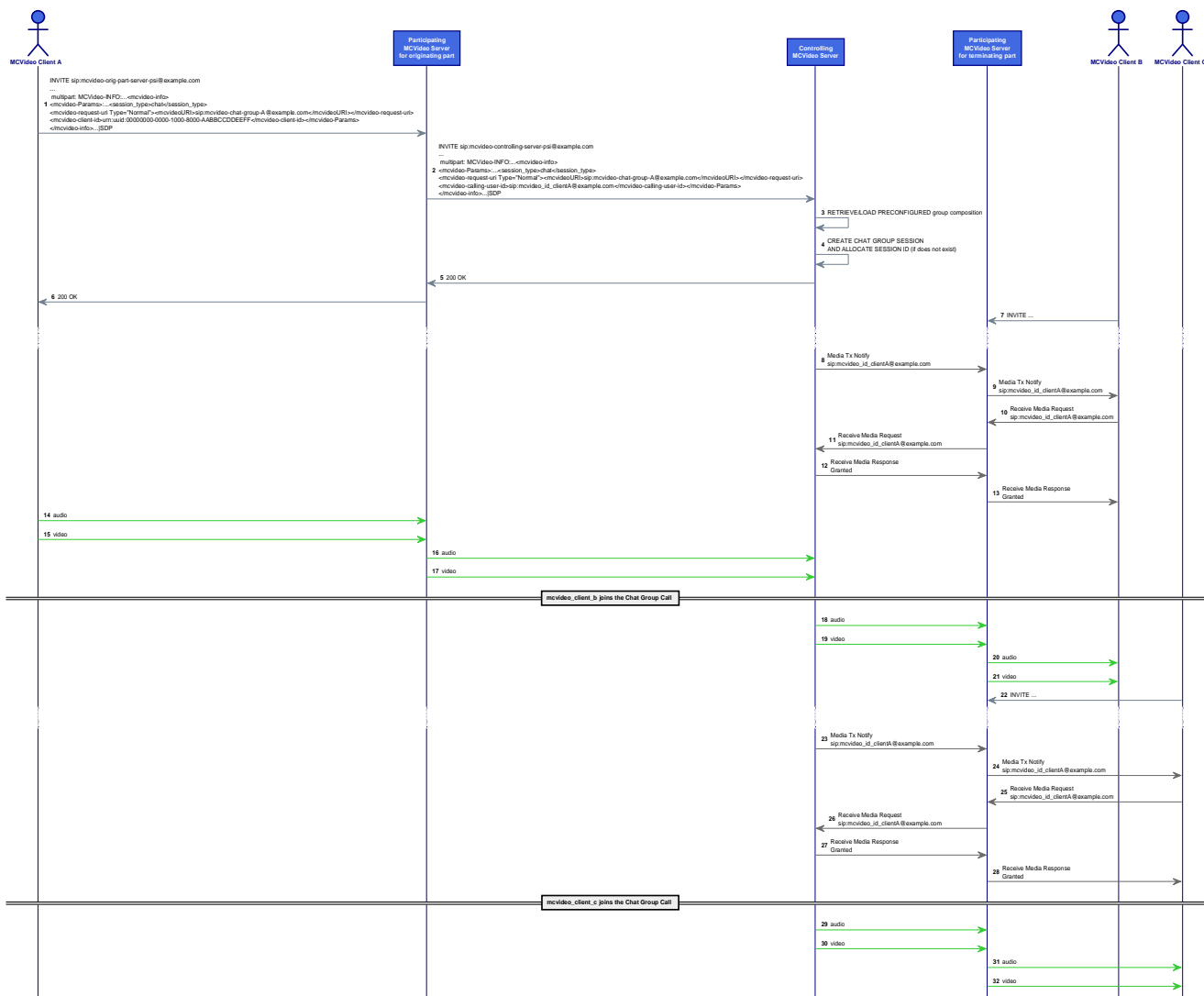


Figure 62: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/01 Message Sequence

Message Details

[1] INVITE MCVideo Caller/UE --> MCVideo Participating

```
INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcvideo";+g.3gpp.mcvideo
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcvideo ";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
P-Preferred-Identity: <sip:mcvideo-clientA@example.com>
Answer-Mode: Manual
```

```

Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]

--[boundary]
Content-Type: application/sdp

v=0
o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP t=0 0
m=audio AUDIO_PORT RTP/AVP 105
i=audio component of MCVideo
a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20 a=maxptime:240
m=video VIDEO_PORT RTP/AVP 97
i=video component of MCVideo
a=rtpmap:97 H264/90000 a=fmtp:97 profile-level-id=640c1f;max-fps=3000
a=sendrecv
a=direction:both
m=application TC_PORT udp MCVideo
a=fmtp:MCVideo mc_queueing;mc_priority=5;mc_granted;mc_implicit_request
...

--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
  <mcvideo-Params>
    <session-type>chat</session-type>
    <mcvideo-request-uri type="Normal">
      <mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>
    </mcvideo-request-uri>
    <mcvideo-client-id type="Normal">
      <mcvideoString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcvideoString>
    </mcvideo-client-id>
  </mcvideo-Params>
</mcvideoinfo>
--[boundary]

[2] INVITE MCVideo Participating --> MCVideo Controlling

INVITE sip:mcvideo-controlling-server-psi@example.com SIP/2.0
To: <sip:mcvideo-controlling-server-psi@example.com>
...

--[boundary]

Content-Type: application/sdp
...
--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
  <mcvideo-Params>
    <session-type>chat</session-type>
    <mcvideo-request-uri type="Normal">
      <mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>
    </mcvideo-request-uri>
    <mcvideo-calling-user-id type="Normal">
      <mcvideoURI>sip:mcvideo_id_clientA@example.com</mcvideoURI>
    </mcvideo-calling-user-id>
  </mcvideo-Params>
</mcvideoinfo>
--[boundary]
...

```

## Interoperability Test Description

Table 71: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of an on demand MCVideo Chat Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system and users properly affiliated to the called chat group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) calls mcvideo-chat-group-A
	2	check	INVITE received at participating server of mcvideo_id_clientA@example.com after traversing SIP core/IMS
	3	check	INVITE received at the MCVideo controlling server
	4	check	Controlling server loads the affiliated members of the mcvideo-chat-group-A, creates the session and returns a 200 OK to the callee. No (re)INVITE will sent to other members
	5	check	Users 2 and 3 repeat the same procedure
	6	check	SIP dialog established
	7	check	Media Tx Notify received at participating servers
	8	check	Media Tx Notify received at the affiliated mcvideo_id_clientX
	9	check	Receivers accept the media with a Receive Media Request
	10	check	Receive Media Request received at participating servers
	11	check	Receive Media Request received at controlling server
	12	check	Controlling server sends Receive Media Response with result Granted
	13	check	Receive Media Response received at participating servers
	14	check	Receive Media Response received at each mcvideo_id_clientX
	15	verify	Call connected and multiple media flows exchanged



## 7.2.58 Late call entry of a MCPTT User during an on-demand prearranged MCPTT Group Call [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/07]

According to clause 10.1.1.4.6 in ETSI TS 124 379 [9] during an ongoing on-demand prearranged group call, when the controlling MCPTT function is notified that an MCPTT client is newly affiliated, it shall invite the MCPTT client to join the call by following the procedures specified in clause 10.1.1.4.1. Therefore, in the terminating side, the same procedures as in a regular prearranged group call will be carried out, like in CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/01 (clause 7.2.1), but triggered upon affiliation, not during the group call setup.

### Message Sequence Diagram

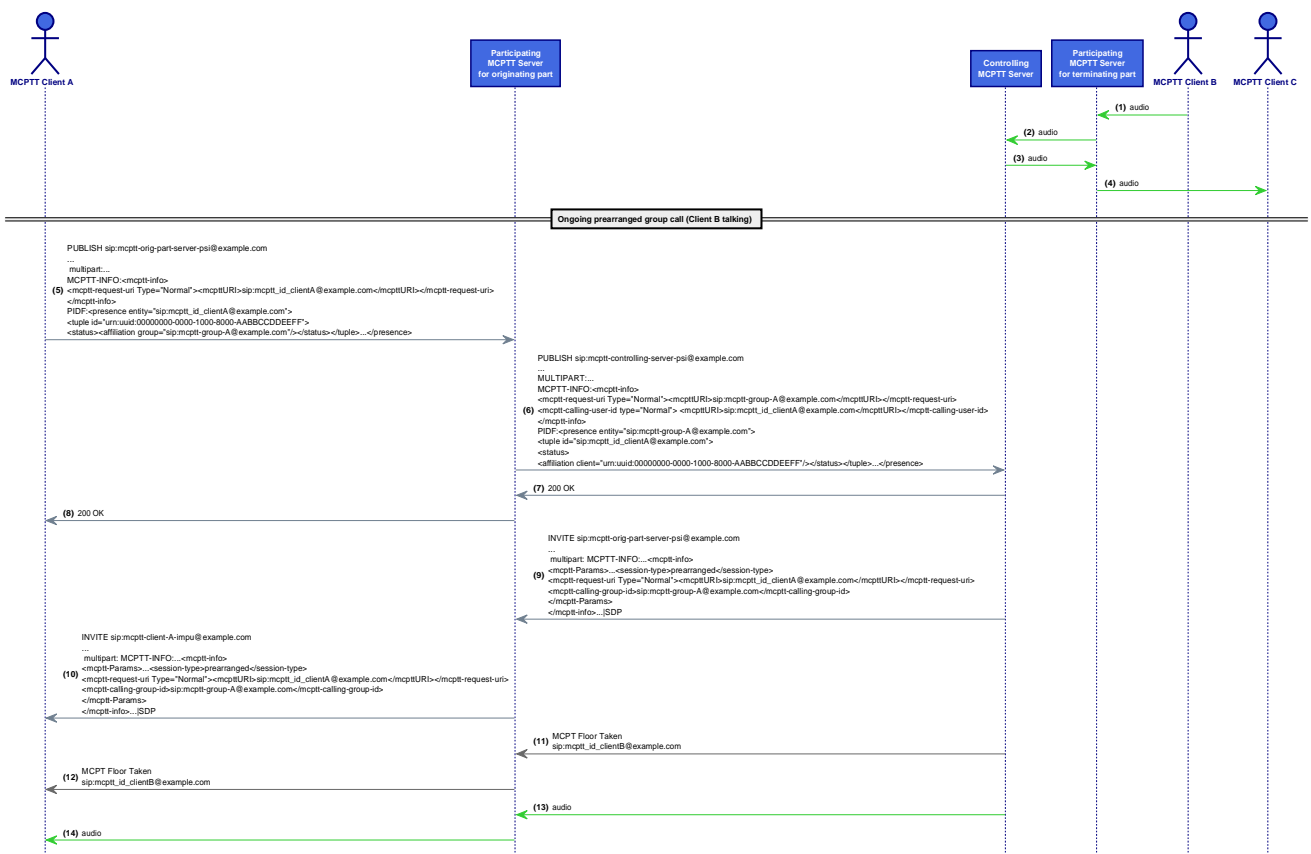


Figure 62a: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/07 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 71a: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/07 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/07		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity - among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• An on demand prearranged group call is ongoing</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) newly affiliates or comes back from out of coverage
	2	check	PUBLISH sent to the participating
	3	check	PUBLISH received at the MCPTT controlling server
	4	check	The MCPTT controlling server creates an INVITE for mcptt_id_clientA
	5	check	INVITEs received at the MCPTT participating server of mcptt_id_clientA
	6	check	INVITE received at the affiliated mcptt_id_clientA
	7	check	Floor control information exchanged (Floor Taken in this case)
	8	verify	Call connected and media flows arrive at mcptt_id_clientA
<b>NOTE:</b>	It is not considered the triggering and possible effects of (un)successful implicit affiliation in the MCPTT participating server for the case when the calling is not affiliated to the group identified in the "SIP INVITE request for originating participating MCPTT function" as determined by clause 9.2.2.2.11 in ETSI TS 124 379 [9].		

### 7.2.59 Late call entry of a MCPTT User during a prearranged MCPTT Group Call using pre-established session [CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/03]

Equivalent test case as in clause 7.2.58 but the MCPTT Client of the User late entering uses pre-established session. Therefore the terminating side will be that in CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/01 (clause 7.2.7).

Message Sequence Diagram

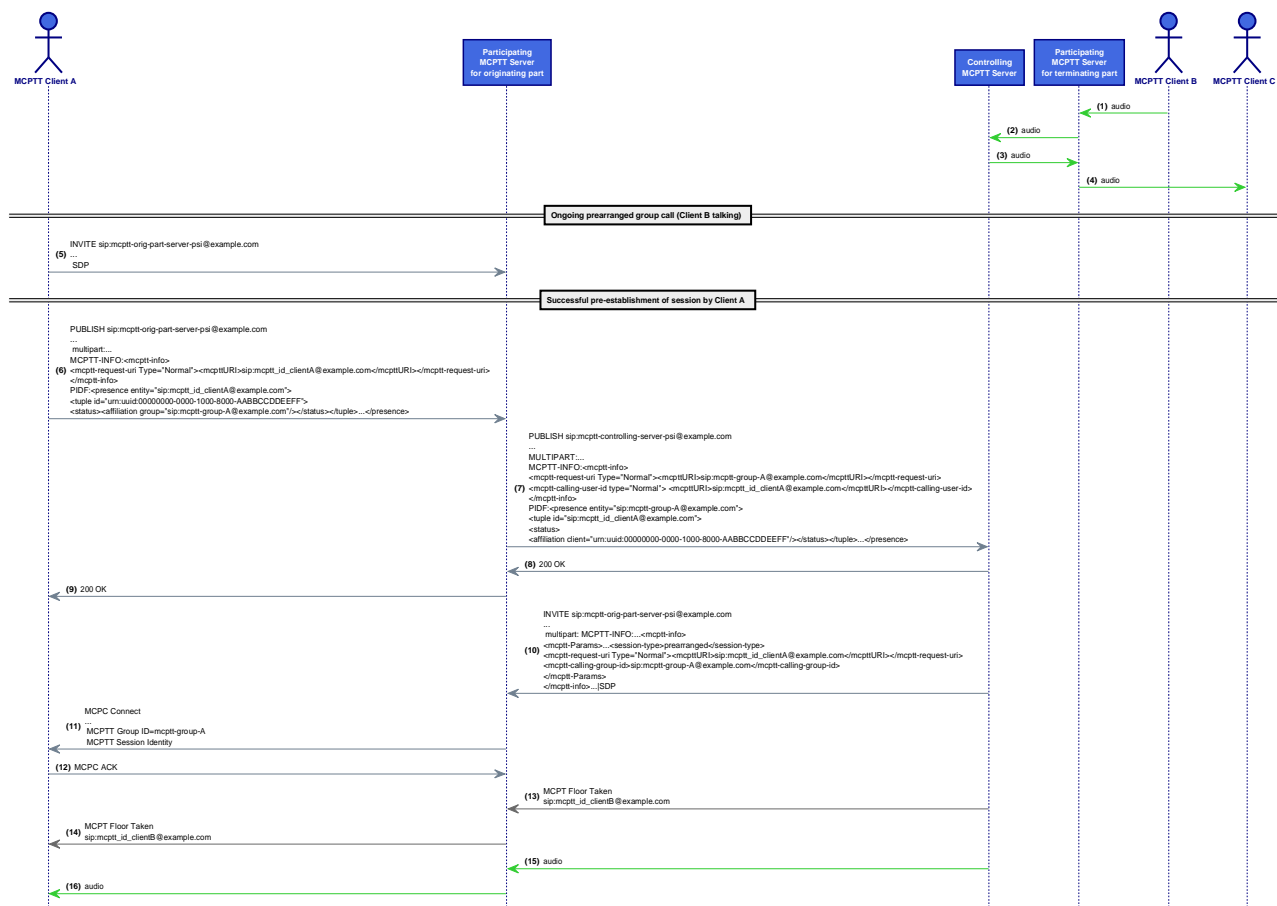


Figure 62b: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/03 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 71b: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/03 ITD

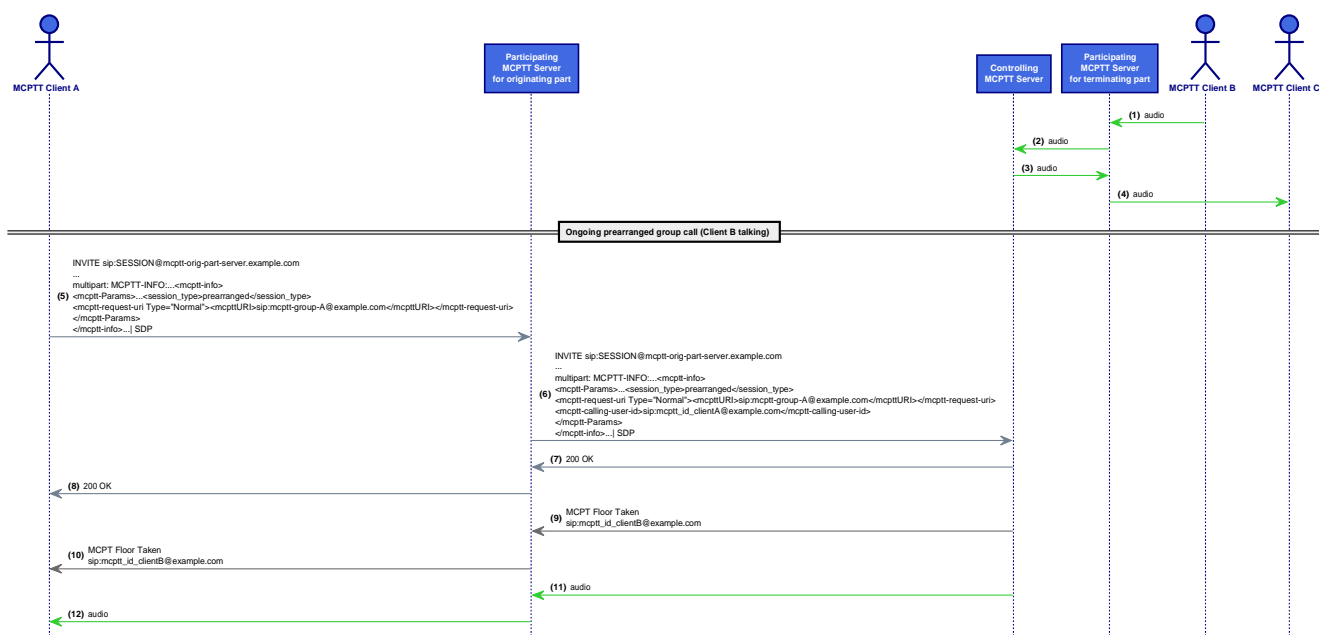
Interoperability Test Description	
<b>Identifier</b>	CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/03
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</li> </ul>

Interoperability Test Description			
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity - among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>An on-demand prearranged group call is ongoing and the User 1 has a pre-established session</li> </ul>		
Test Sequence	Step	Type	Description
	1	stimulus	User 1 (mcptt_id_clientA@example.com) newly affiliates or comes back from out of coverage
	2	check	PUBLISH sent to the participating
	3	check	PUBLISH received at the MCPTT controlling server
	4	check	The MCPTT controlling server creates an INVITE for mcptt_id_clientA
	5	check	INVITEs received at the MCPTT participating server of mcptt_id_clientA
	6	check	MCPC procedure to signal the new call to mcptt_id_clientA
	7	check	Floor control information exchanged (Floor Taken in this case)
	8	verify	Call connected and media flows arrive at mcptt_id_clientA
<b>NOTE:</b> It is not considered the triggering and possible effects of (un)successful implicit affiliation in the MCPTT participating server for the case when the calling is not affiliated to the group identified in the "SIP INVITE request for originating participating MCPTT function" as determined by clause 9.2.2.2.11 in ETSI TS 124 379 [9].			

### 7.2.60 Rejoin of a MCPTT User during an on-demand prearranged MCPTT Group Call [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/08]

According to clauses 10.1.1.2.4, 10.1.1.3.5 and 10.1.1.4.5 in ETSI TS 124 379 [9] upon receiving a request from an MCPTT user to re-join an ongoing MCPTT session or triggered by coming back from out of coverage, the MCPTT client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in ETSI TS 124 229 [6]. The Request-URI of the SIP INVITE request shall contain a URI of the MCPTT session identity to re-join.

#### Message Sequence Diagram



Message Details

Trace Pending

Interoperability Test Description

**Table 71c: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/07 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/07		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity - among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• An on demand prearranged group call is ongoing</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) comes back from out of coverage/rejoins
	2	check	INVITE sent to the participating
	3	check	The MCPTT participating server checks the existence of the session identity included in the R-URI
	4	check	INVITE received at the MCPTT controlling server
	5	check	The MCPTT controlling server checks the existence of a group call with the session identity included in the R-URI
	6	check	Floor control information exchanged (Floor Taken in this case)
	7	verify	Call connected and media flows arrive at mcptt_id_clientA
<b>NOTE:</b>	It is not considered the triggering and possible effects of (un)successful implicit affiliation in the MCPTT participating server for the case when the calling is not affiliated to the group identified in the "SIP INVITE request for originating participating MCPTT function" as determined by clause 9.2.2.2.11 in ETSI TS 124 379 [9].		

### 7.2.61 Rejoin of a MCPTT User during an on-demand prearranged MCPTT Group Call using pre-established session [CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/04]

Equivalent test case as in clause 7.2.60 but the MCPTT Client of the User rejoining the prearranged group call uses a pre-established session. Therefore the terminating side will be that in CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/01 (clause 7.2.7).

Message Sequence Diagram

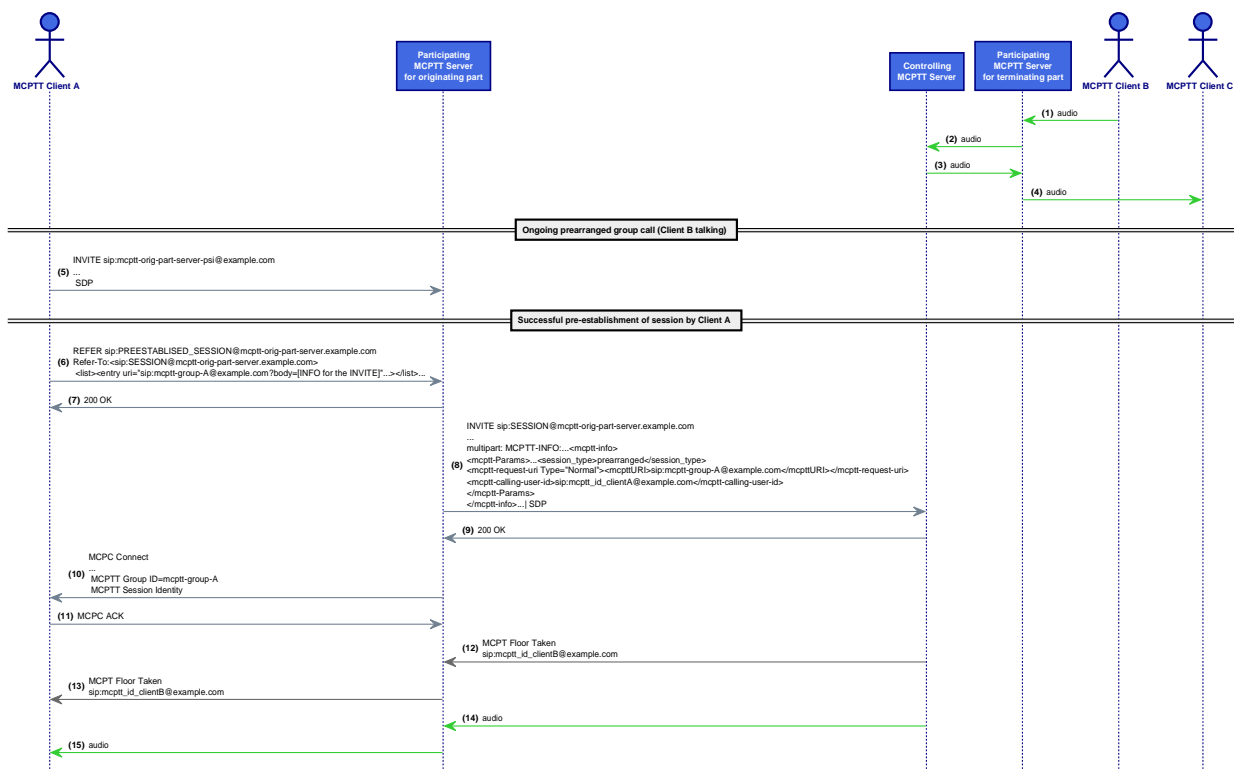


Figure 62d: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/04 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 71d: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/04 ITD

Interoperability Test Description	
<b>Identifier</b>	CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/04
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</li> </ul>
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity - among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• An on demand prearranged group call is ongoing and the User 1 has a pre-established session</li> </ul>

Interoperability Test Description			
Test Sequence	Step	Type	Description
	1	stimulus	User 1 (mcptt_id_clientA@example.com) comes back from out of coverage/rejoins
	2	check	REFER sent to the participating
	3	check	The MCPTT participating server checks the existence of the session identity included in Refer-To header
	4	check	INVITE received at the MCPTT controlling server
	5	check	The MCPTT controlling server checks the existence of a group call with the session identity included in the R-URI
	6	check	The participating server receives the response from the controlling server
	7	check	MCPC procedure to signal the successful call rejoin to mcptt_id_clientA
	8	check	Floor control information exchanged (Floor Taken in this case)
	9	verify	Call connected and media flows arrive at mcptt_id_clientA
NOTE: It is not considered the triggering and possible effects of (un)successful implicit affiliation in the MCPTT participating server for the case when the calling is not affiliated to the group identified in the "SIP INVITE request for originating participating MCPTT function" as determined by clause 9.2.2.11 in ETSI TS 124 379 [9].			

## 7.2.62 Subscription to Conference Event Package [CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/SUBCONF/01]

A MCPTT client subscribes to the conference state event package at any time during an ongoing group session (and the ongoing group call is not initiated as a broadcast group call) to obtain the status of the participants in that group session. In order to do so the MCPTT client subscribes to the conference state event package by sending a SIP SUBSCRIBE request to the MCPTT session identity of the group session and including an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcptt-request-uri> element set to the MCPTT group ID of the group session, following the procedures in clause 10.1.3.2 in ETSI TS 124 379 [9]. The participating MCPTT function shall then forward the conference state subscription (and later notifications) as specified in clause 10.1.3.3 in ETSI TS 124 379 [9]. Finally, the controlling MCPTT function shall handle subscriptions and notification of conference state events as specified in clause 10.1.3.4 in ETSI TS 124 379 [9].

Note that an on-demand chat group call has been chosen to show the subscription mechanism in this test case.

Message Sequence Diagram



Figure 62e: CONN-MCPPTT/ONN/GROUP/CHAT/ONDEM/SUBCONF/01 Message Sequence

Message Details

Trace Pending



## Interoperability Test Description

Table 71e: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/SUBCONF/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/SUBCONF/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for the subscription to the conference event during an on demand chat Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity - among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates an on demand chat group call
	2	check	On demand chat group call correctly established
	3	check	User 1 (mcptt_id_clientA@example.com) sends an affiliation subscription (SIP SUBSCRIBE) request to the conference event to its MCPTT originating participating server
	4	check	The MCPTT originating participating server forwards the SUBSCRIBE to the controlling
	5	check	The MCPTT controlling server sends a NOTIFY related to the subscription to the participating
	6	check	Conference information is correctly received at the MCPTT Client upon proper NOTIFY forwarding by its participating
	7	stimulus	User 2 (mcptt_id_clientB@example.com) joins the on demand chat group call
	8	check	The MCPTT controlling server sends a NOTIFY related to the subscription to the participating
	9	verify	New conference information is correctly received at the MCPTT Client upon proper NOTIFY forwarding by its participating
	10	stimulus	User 3 (mcptt_id_clientC@example.com) joins and later leaves the on demand chat group call
	11	check	The MCPTT controlling server sends a NOTIFY related to the subscription to the participating
	12	verify	New conference information is correctly received at the MCPTT Client upon proper NOTIFY forwarding by its participating
<b>NOTE:</b>	It is not considered the triggering and possible effects of (un)successful implicit affiliation in the MCPTT participating server for the case when the calling is not affiliated to the group identified in the "SIP INVITE request for originating participating MCPTT function" as determined by clause 9.2.2.2.11 in ETSI TS 124 379 [9].		

### 7.2.63 MCPTT User initiates an on-demand private MCPTT emergency call in automatic commencement model with floor control [CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/02]

Whenever the MCPTT user has requested the origination of an MCPTT emergency private call or is originating an MCPTT private call and the MCPTT emergency state is already set, the MCPTT client will carry out a signalling equivalent to that on CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/01 but including in the application/vnd.3gpp.mcptt-info+xml MIME body in the SIP request an <emergency-ind> element set to "true".

Message Sequence Diagram

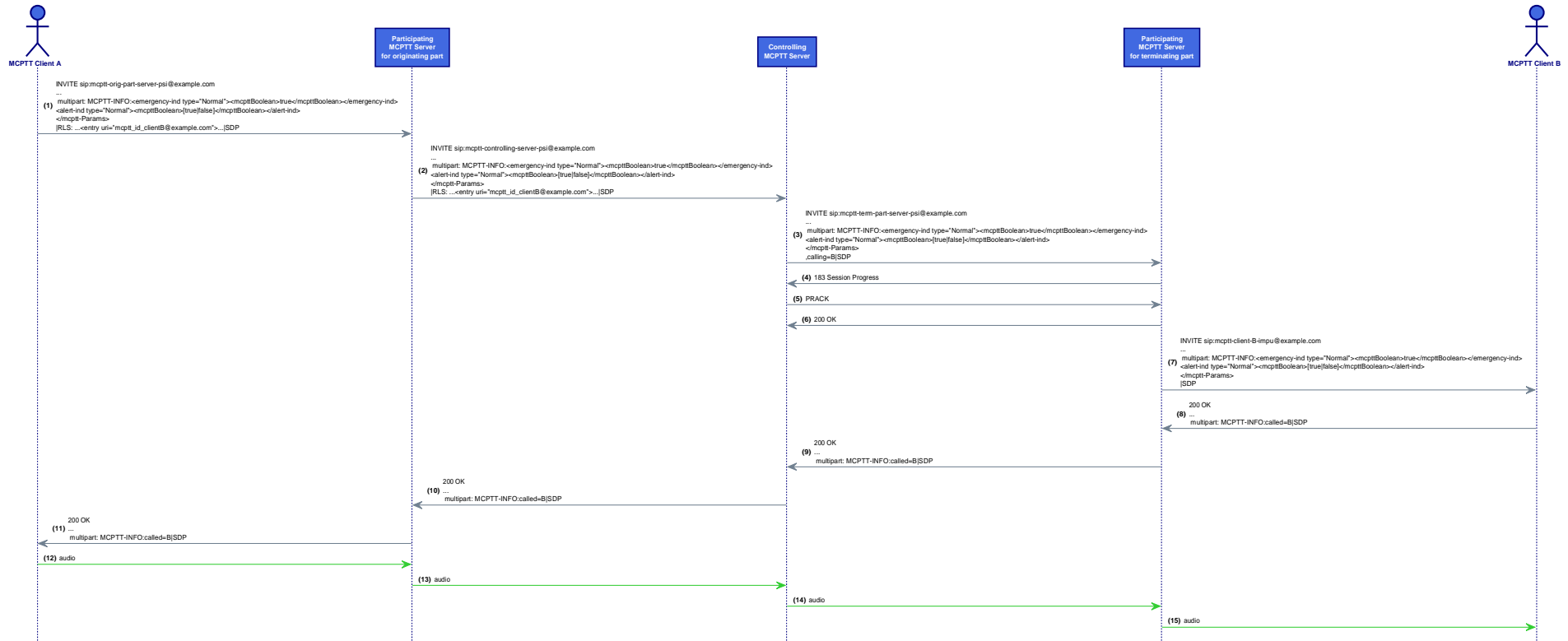


Figure 62f: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/02 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 71f: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a emergency private call with automatic commencement mode		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
Test Sequence	Step	Type	Description
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates an emergency private call to User 2 (mcptt_id_clientB@example.com) by including the <emergency-ind> parameter
	2	check	Dialog creating INVITE received at the MCPTT participating server of User 1
	3	check	The participating server adapts the mcptt-info accordingly and creates an INVITE to the controlling server
	4	check	The controlling server check permissions and forward the INVITE to the participating server of the callee
	5	check	Upon arrival of the INVITE adapted by the terminating participating function at User 2 the emergency call is automatically taken
	6	verify	Call connected and media flows exchanged

## 7.2.64 MCPTT User initiates an emergency alert by sending a SIP MESSAGE [CONN-MCPTT/ONN/EMERG-ALERT/MSG/01]

MCPTT emergency alerts are supported procedurally by two general mechanisms: One mechanism is embedded within the MCPTT emergency call (both emergency private call and emergency group call using both prearranged and chat session models) signalling procedures documented in clause 10 and clause 11 of ETSI TS 124 379 [9]. The other mechanism utilizes SIP MESSAGE requests and is documented in clause 12 of the same TS.

Since the optional submission of the alert indicator was already considered in the emergency calling procedures (i.e. see clause 7.2.2) the following 4 test cases focus on MCPTT emergency alerts initiated or cancelled using SIP MESSAGE as described in the procedures of clause 12 in ETSI TS 124 379 [9] including: MCPTT emergency alert initiation and MCPTT emergency alert cancellation (with optional cancelling of the in-progress emergency state of a group) and location.

In this first emergency alert test case, upon receiving a request from the MCPTT the initiation of an authorized (as determined by clause 6.2.8.1.6) emergency alert to the indicated MCPTT group shall generate, according to clause 12.1.1.1) a SIP MESSAGE in accordance with ETSI TS 124 229 [6] and IETF RFC 3428 [42] that will include an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcpttinfo> element containing the <mcptt-Params> element with the <mcptt-request-uri> element set to the group identity, the <alert-ind> element set to a value of "true", the <mcptt-client-id> element set to the MCPTT client ID of the originating MCPTT client and the specific location information for MCPTT emergency alert as specified in clause 6.2.9.1 of ETSI TS 124 379 [9].

The originating participating server (clause 12.1.2.1), upon checking the identity and authorization of the MCPTT user, will forward the message to the controlling (clause 12.1.3.1). The controlling server will generate an outgoing SIP MESSAGE request notification of the MCPTT user's emergency alert indication as specified in clause 6.3.3.1.11 with the clarifications of clause 6.3.3.1.12 for each of the other affiliated members of the group. Later it will later successful receipt of an emergency alert by generating a SIP MESSAGE as described in clause 6.3.3.1.20 with the <alert-ind> element set to a value of "true", the <alert-ind-rcvd> element set to a value of true and the <mcptt-client-id> element with the MCPTT client ID that was included in the incoming SIP MESSAGE request.

Message Sequence Diagram

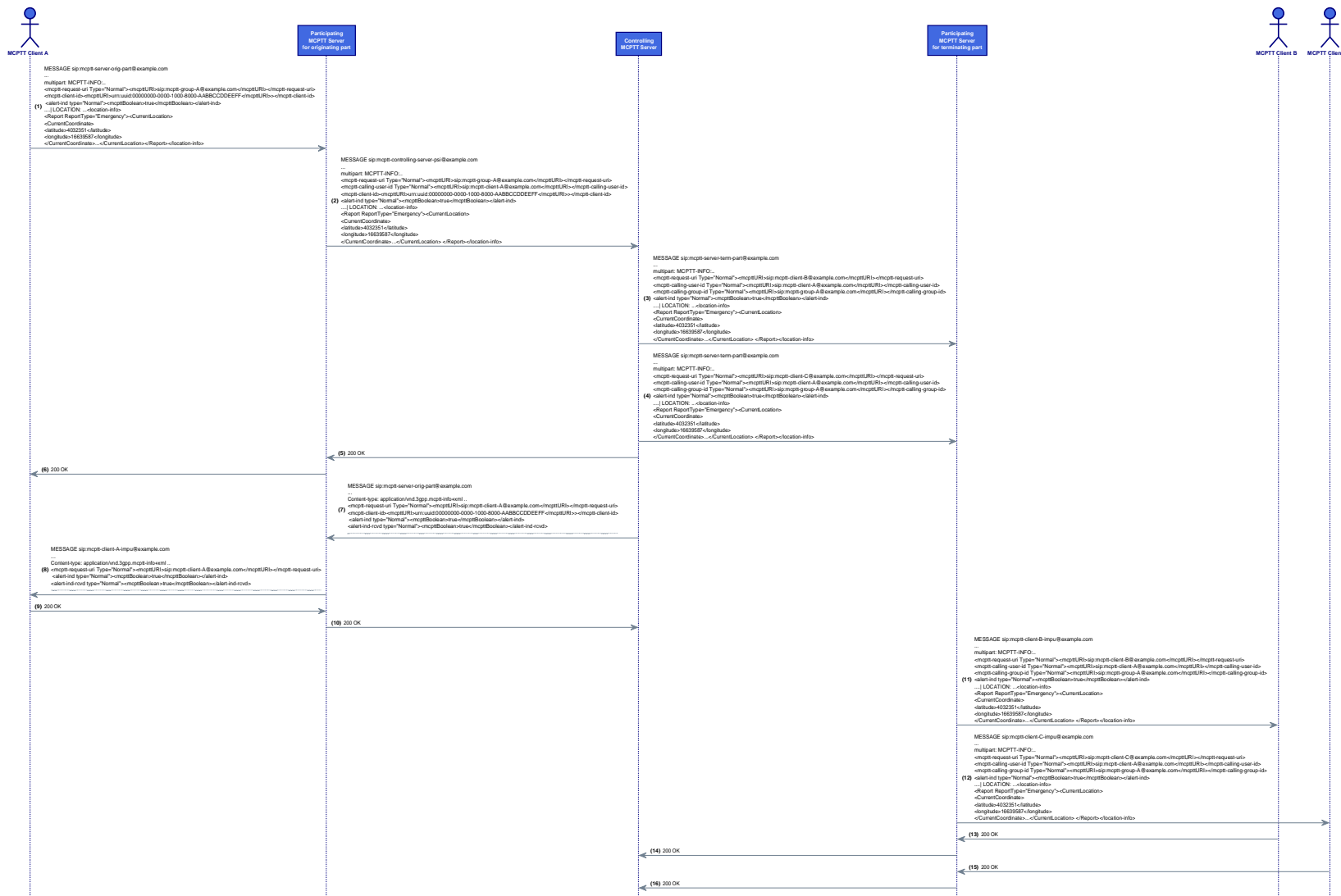


Figure 62g: CONN-MCPTT/ONN/EMERG-ALERT/MSG/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 71g: CONN-MCPTT/ONN/EMERG-ALERT/MSG/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/EMERG-ALERT/MSG/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the initiation of an emergency alert.		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Calling user is affiliated to the group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) triggers an emergency alert to mcptt-group-A by creating a SIP message and setting the proper elements in the mcptt-info MIME body
	2	check	SIP MESSAGE received at the MCPTT participating server of User 1
	3	check	The participating server check rules, maps identities and forwards the message to the controlling server
	4	check	The MCPTT controlling server loads the affiliated members of the mcptt-group-A (either preconfigured or retrieved from the GMS) and creates a SIP message per each of the "n" members
	5	check	The MCPTT controlling server sends a notification of the reception of the alert to User 1 through the originating participating
	6	check	Alert indication received at mcptt_id_clientA
	7	check	"n" alert indicating SIP MESSAGES received at mcptt_id_clientX
	8	verify	An indication of the Emergency alert is shown to the group members

## 7.2.65 MCPTT User cancels an emergency alert by sending a SIP MESSAGE [CONN-MCPTT/ONN/EMERG-ALERT/MSG/02]

As a precondition of this test case, a group has entered the emergency state either upon the submission of an explicit SIP MESSAGE as in [CONN-MCPTT/ONN/EMERG-ALERT/MSG/01] or by piggybacking the <alert-ind> element in an emergency operation in a group call (i.e. either during setup or upgrade). Then, upon receiving a request from the MCPTT user to send an MCPTT emergency alert cancellation to the indicated MCPTT group and following the procedure in clause 12.1.1.2 in ETSI TS 124 379 [9] the client will check that this is an authorized request as determined by clause 6.2.8.1.6. Once checked, the MCPTT client shall generate a SIP MESSAGE request in accordance with ETSI TS 124 229 [6] and IETF RFC 3428 [42] equivalent to that in the previous test case but with the <alert-ind> element set to a value of "false". The originating participating server (clause 12.1.2.1) will forward the message to the controlling. The controlling server (clause 12.1.3.2) will generate an outgoing SIP MESSAGE request for each of the affiliated but not joined members of the group according to procedure in clause 6.3.3.1.11 with an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcpttinfo> element containing the <mcptt-Params> element with the <mcptt-calling-user-id> element set to the value of the <mcptt-calling-user-id> element in the received SIP MESSAGE request and an <alert-ind> element set to a value of "false".

Similar to the initiation, after replying with a SIP 200(OK) the controlling will later generate a SIP MESSAGE back to the cancelling user to indicate successful reception of the request for emergency alert cancellation (thus, setting the <alert-ind> element to a value of "false" and the <alert-ind-rcvd> to "true").



Message Sequence Diagram

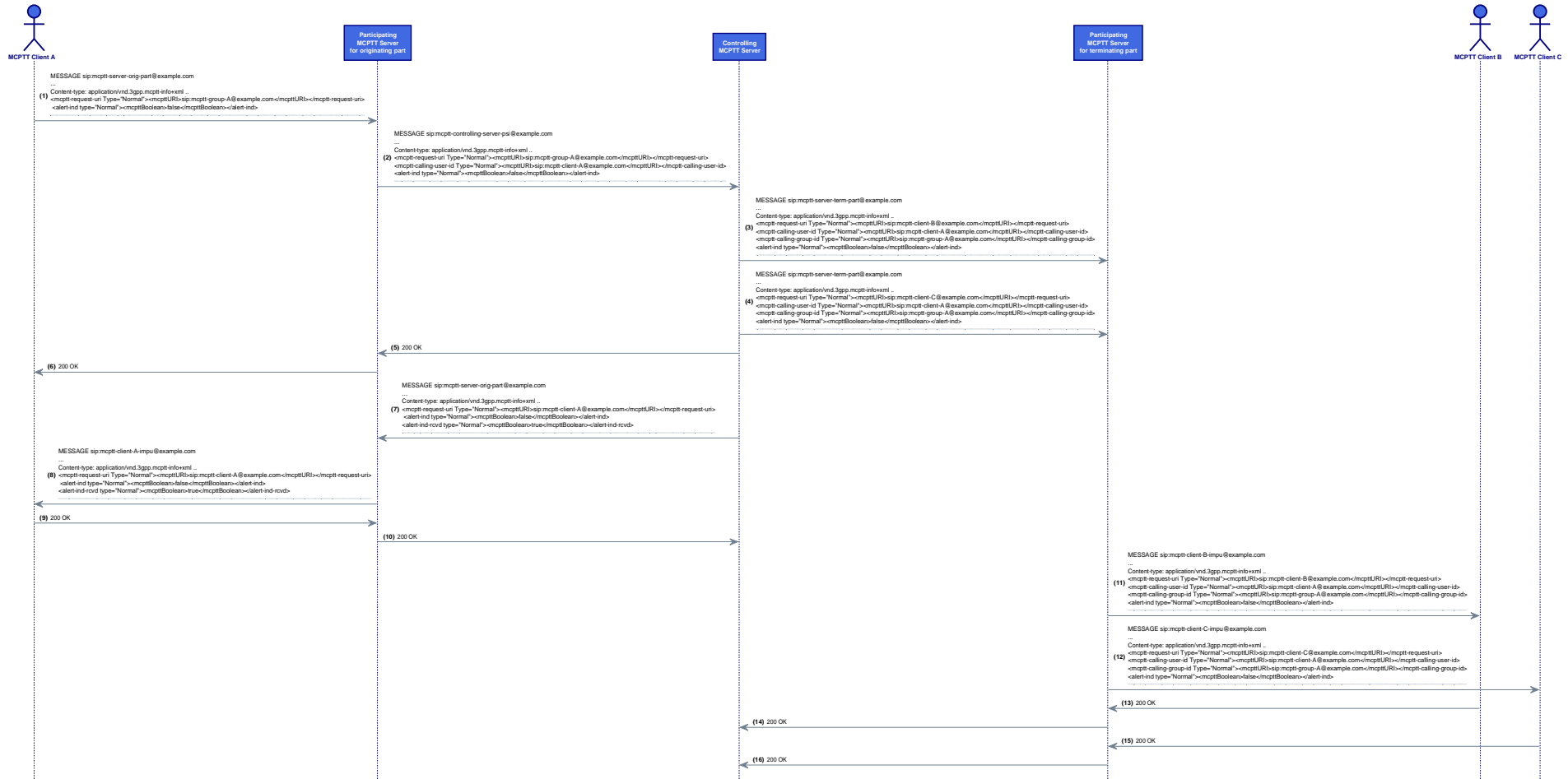


Figure 62h: CONN-MCPTT/ONN/EMERG-ALERT/MSG/02 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 71h: CONN-MCPTT/ONN/EMERG-ALERT/MSG/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/EMERG-ALERT/MSG/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the cancellation of an emergency alert.		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• User 1 had sent emergency alert state</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) triggers an emergency alert cancellation to mcptt-group-A by creating a SIP message and setting the <alert-ind> to false in the mcptt-info MIME body
	2	check	SIP MESSAGE received at the MCPTT participating server of User 1
	3	check	The participating server check rules, maps identities and forwards the message to the controlling server
	4	check	The MCPTT controlling server loads the affiliated members of the mcptt-group-A (either preconfigured or retrieved from the GMS) and creates a SIP message per each of the "n" members
	5	check	The MCPTT controlling server sends a notification of the reception of the alert cancellation to User 1 through the originating participating
	6	check	Alert cancellation indication received at mcptt_id_clientA
	7	check	"n" alert cancellation indicating SIP MESSAGES received at mcptt_id_clientX
	8	verify	All group members are notified of the cancellation and the originating client sets the internal status to "MEA 1: no-alert"

## 7.2.66 MCPTT User cancels an emergency alert originated by other user by sending a SIP MESSAGE [CONN-MCPTT/ONN/EMERG-ALERT/MSG/03]

This test case is equivalent to clause 7.2.65 but it's another user the one cancelling the emergency alert.

In order to do so the MCPTT client of the user cancelling an MCPTT emergency alert originated by another MCPTT will include the <originated-by> element set to the MCPTT ID of the MCPTT user who originated the MCPTT emergency alert.

In every subclause in clause 12.1 in ETSI TS 124 379 [9] analysed in the previous test case the specific handling of the <originated-by> element is specified.

Message Sequence Diagram

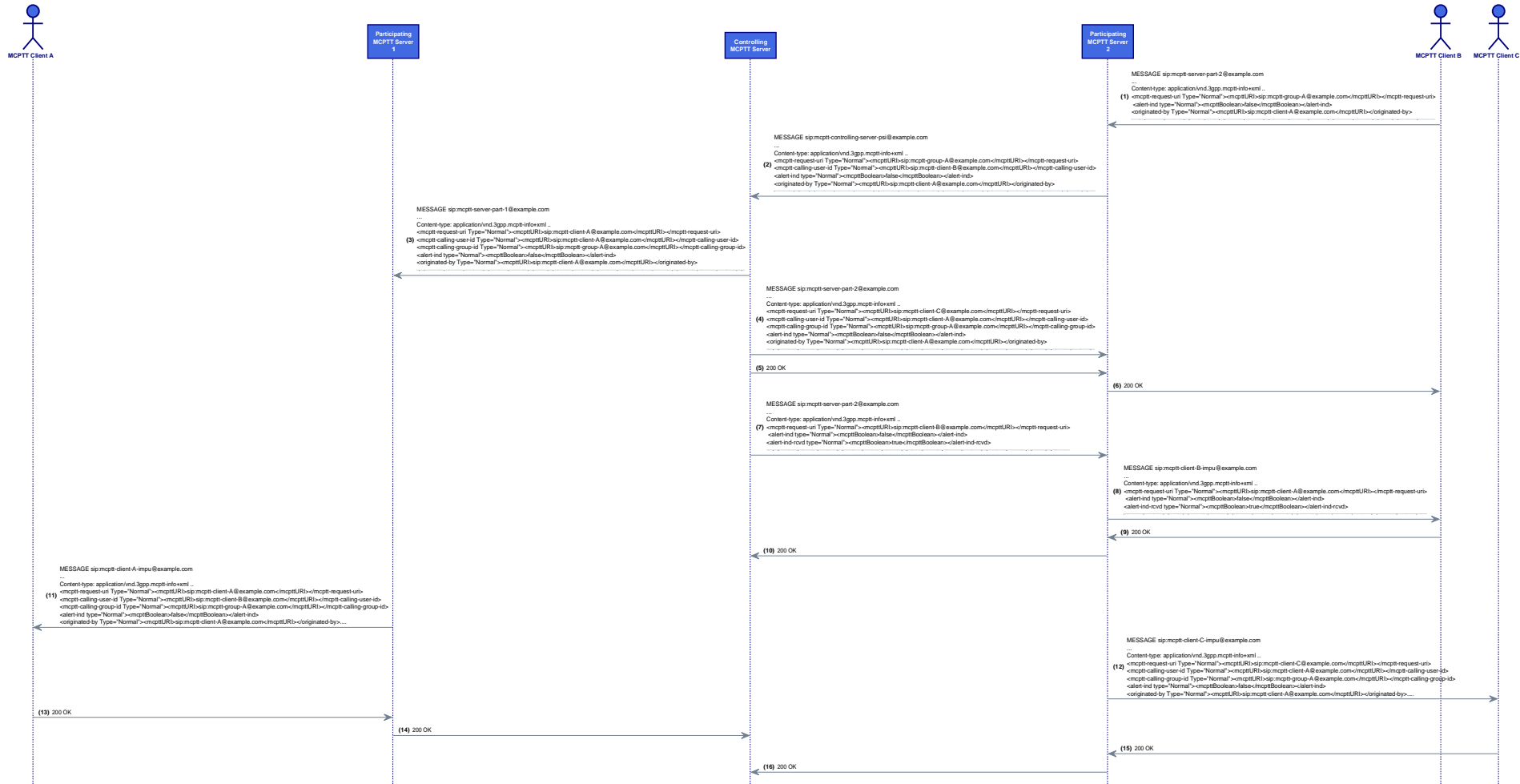


Figure 62i: CONN-MCPTT/ONN/EMERG-ALERT/MSG/03 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 71i: CONN-MCPTT/ONN/EMERG-ALERT/MSG/03 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/EMERG-ALERT/MSG/03		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the cancellation of an emergency alert originated by another user.		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• User 1 had sent an emergency alert</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 2 (mcptt_id_clientB@example.com) triggers an emergency alert to mcptt-group-A by creating a SIP message, setting the <alert-ind> to false in the mcptt-info MIME body, and <originated-by> to mcptt_id_clientA
	2	check	SIP MESSAGE received at the MCPTT participating server of User 2
	3	check	The participating server check rules, maps identities and forwards the message to the controlling server
	4	check	The MCPTT controlling server loads the affiliated members of the mcptt-group-A (either preconfigured or retrieved from the GMS) and creates a SIP message per each of the "n" members
	5	check	The MCPTT controlling server sends a notification of the reception of the cancellation of the alert to User 2 through its originating participating
	6	check	Alert cancellation indication received at mcptt_id_clientB
	7	check	"n" alert cancellation indicating SIP MESSAGES received at mcptt_id_clientX
	8	verify	All group members are notified of the cancellation and the originated-by client sets the internal status to "MEA 1: no-alert"

## 7.2.67 MCPTT client receives a notification of entry into a group geographic area [CONN-MCPTT/ONN/EMERG-ALERT/MSG/04]

When the participating MCPTT function determines that the MCPTT client has entered a pre-defined group geographic area it will notify the MCPTT client that it has entered such pre-defined area requiring affiliation.

More specifically, when receiving a Location information report according to clause 13.2.4 in ETSI TS 124 379 [9] the participating MCPTT function shall follow the procedures in clause 6.3.3.1.21. Therefore, it shall generate, a SIP MESSAGE in accordance with ETSI TS 124 229 [6] and IETF RFC 3428 [42] that will include an application/vnd.3gpp.mcptt-info+xml MIME <mcptt-request-uri> element set to the value of the MCPTT ID of the targeted MCPTT user and a <emergency-alert-area-ind>element set to a value of "true".

The Client following clause 12.1.1.4 ETSI TS 124 379 [9] will (or will not in case of ambient listening is occurring) display to the user that a group geographic area has been entered.

### Message Sequence Diagram



Figure 62j: CONN-MCPTT/ONN/EMERG-ALERT/MSG/04 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 71j: CONN-MCPTT/ONN/EMERG-ALERT/MSG/04 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/EMERG-ALERT/MSG/04		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the notification of entry in an emergency alert area.		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Emergency geo area preconfigure in participatibng</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	MCPTT Client of User 1 (mcptt_id_clientA@example.com) sends a location report triggered by any event.
	2	check	SIP MESSAGE received at the MCPTT participating server of User 1
	3	check	The participating server detects that the Client has entered the predefined geographic area of mcptt-group-a
	4	check	The participating server sends a SIP MESSAGE with the notification of entry to the group area
	5	verify	Entry into a group area is notified to User 1

## 7.2.68 MCPTT client receives a notification of exit from a group geographic area [CONN-MCPTT/ONN/EMERG-ALERT/MSG/05]

When the participating MCPTT function determines that the MCPTT client has exited from a pre-defined group geographic area requiring de-affiliation it will notify the MCPTT client.

Following the same procedure as in clause 7.2.67, when receiving a Location information report according to clause 13.2.4 in ETSI TS 124 379 [9] the participating MCPTT function shall follow the procedures in clause 6.3.3.1.21 and shall generate, a SIP MESSAGE in accordance with ETSI TS 124 229 [6] and IETF RFC 3428 [42] that will include an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcpttinfo> element containing the <mcptt-Params> element with the <mcptt-request-uri> element set to the value of the MCPTT ID of the targeted MCPTT user and a <emergency-alert-area-ind> element set to a value of "false".

Message Sequence Diagram



Figure 62k: CONN-MCPTT/ONN/EMERG-ALERT/MSG/05 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 71k: CONN-MCPTT/ONN/EMERG-ALERT/MSG/05 ITD

Interoperability Test Description	
<b>Identifier</b>	CONN-MCPTT/ONN/EMERG-ALERT/MSG/05
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the notification of exit from an emergency alert area.
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</li> </ul>
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Emergency geo area preconfigured in the participating</li> </ul>

Interoperability Test Description			
Test Sequence	Step	Type	Description
	1	stimulus	MCPTT Client of User 1 (mcptt_id_clientA@example.com) sends a location report triggered by any event
	2	check	SIP MESSAGE received at the MCPTT participating server of User 1
	3	check	The participating server detects that the Client has exited an emergency-alert geographic area
	4	check	The participating server sends a SIP MESSAGE with the notification of entry in the group area
	5	verify	Exit from a group area is notified to User

### 7.2.69 MCPTT User exits an ongoing an on-demand prearranged MCPTT Group Call upon de-affiliation to this group [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/09]

According to clause 9.2.2.3.3 in ETSI TS 124 379 [9] the controlling, upon receiving a SIP PUBLISH request such that the selected expiration time is zero for a specific group id, shall notify the change of affiliation status following the procedure specified in clause 9.2.2.3.5 for that served MCPTT group ID.

Then, according to the clause 10.1.2.4.3.3, the de-affiliation will trigger the controlling function to follow procedures in clause 6.3.3.1.5 and send a SIP BYE request toward the MCPTT client

Finally, after successfully removing the MCPTT client from the MCPTT session, the controlling MCPTT function may generate a notification to the MCPTT clients, which have subscribed to the conference event package that an MCPTT user has been removed from the MCPTT session, as specified in clause 6.3.3.4 and send the SIP NOTIFY request to the MCPTT client according to ETSI TS 124 229 [6].



Message Sequence Diagram

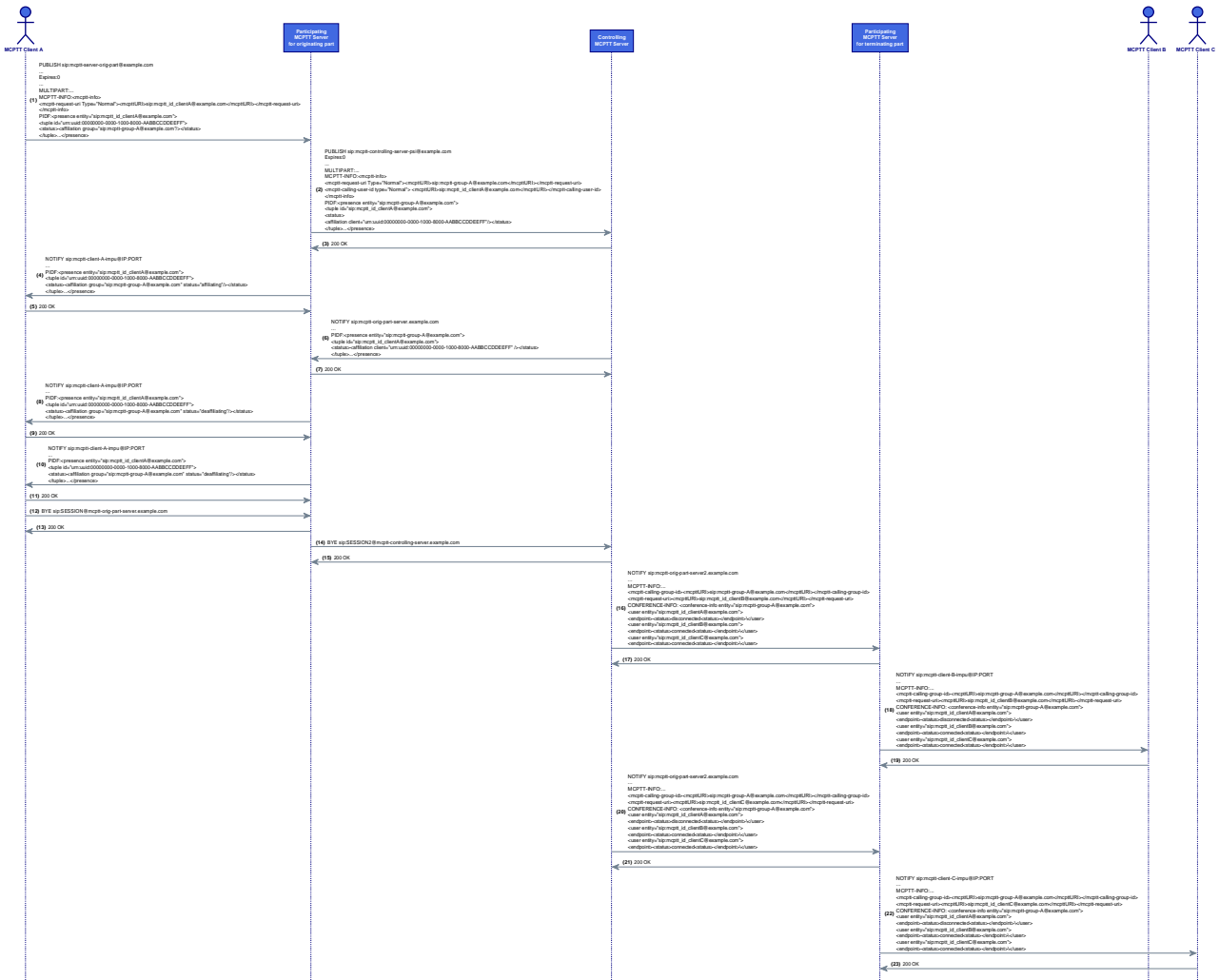


Figure 62I: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/08 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 71I: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/08 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/08		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for exiting an ongoing prearranged on demand group call due to de-affiliation.		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Ongoing prearranged on demand group call</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	MCPTT Client of User 1 (mcptt_id_clientA@example.com) sends a de-affiliation request to mcptt-group-a.
	2	check	SIP PUBLISH received at the MCPTT participating server of User 1
	3	check	The participating server forwards the PUBLISH to the controlling server owning mcptt-group-a
	4	check	Upon deaffiliation, the controlling server sends a BYE to participating that forwards it to the MCPTT Client
	5	verify	BYE received at the MCPTT Client of User 1 who leaves the ongoing call
	6	check	Controlling sends the notification about User 1 leaving the ongoing group call to those group members affiliated to the conference event
	7	check	Terminating participating server forwards the notifications to User 2 and User 3
	8	verify	User 2 and User 3 received the update on the conference event.

## 7.2.70 Receive O2O FD request with mandatory download [CONN-MCDATA/ONN/O2O/FD/HTTP/02]

[CONN-MCDATA/ONN/O2O/FD/HTTP/01] (7.2.45) already deals with the one-to-one file distribution procedure using the HTTP protocol. See comments in CONN-MCDATA/ONN/O2O/FD/HTTP/03 (7.2.71) regarding the relationship between HTTP/media plane signalling usage on the sender and (non)mandatory download ie in the FD request.

## 7.2.71 Receive O2O FD request without mandatory download [CONN-MCDATA/ONN/O2O/FD/HTTP/03]

[CONN-MCDATA/ONN/O2O/FD/HTTP/01] (7.2.45) already deals with the one-to-one file distribution procedure using the HTTP protocol. In the third out of four different steps for the MCDATA the use of clause 10.2.4 in ETSI TS 124 282 [8] is mentioned which inexplicitly assumes the reference to a non-mandatory download on the sending part but no reference to the effect of the (non) mandatory download on the reception was mentioned (note that according to the step 5b in clause 10.2.4.4.1 the controlling could also set the mandatory download feature).

Alternatively, in clause 10.2.1.2.1 in ETSI TS 124 282 [8], the behaviour of the MCDATA client upon reception or (non) mandatory download payload is defined regardless who has previously set the mandatory download. Namely, if the FD SIGNALLING PAYLOAD message contains a Mandatory download IE set to the value of "MANDATORY DOWNLOAD", it shall follow the procedures in clause 10.2.1.2.2 and, if not mandatory, clause 10.2.1.2.3.

Since clause 10.2.1.2.2 would be already covered in [CONN-MCDATA/ONN/O2O/FD/HTTP/01] (7.2.45) and, taking into account aforementioned ambiguity regarding who could set the MANDATORY DOWNLOAD ie in FD using HTTP, in this test case the behaviour of the MCDATA client upon reception of a FD request using HTTP in non-mandatory mode will be considered.

Therefore in this particular case the user deferred the FD request while the timer TDU2 (FD non-mandatory download timer) was running. Therefore, the client generates an FD NOTIFICATION indicating deferral of the FD request as specified in clause 12.2.1.1. Later, upon final download before the timeout a download complete FD NOTIFICATION will be issued.

Message Sequence Diagram

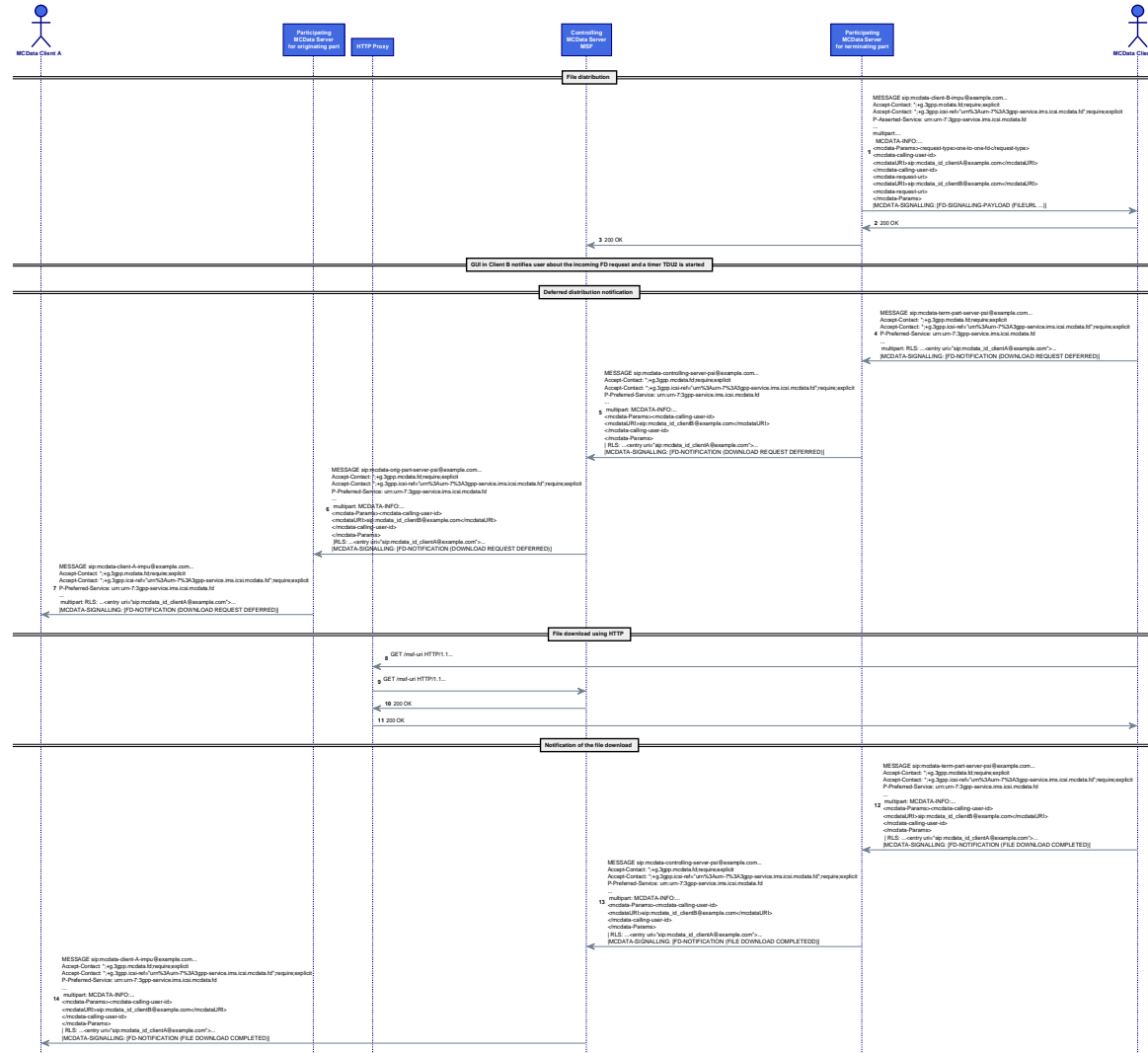


Figure 62m: CONN-MCDATA/ONN/O2O/FD/HTTP/03 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 71m: CONN-MCDATA/ONN/O2O/FD/HTTP/03 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/ONN/GROUP/FD/HTTP/03		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, HTTP file distribution without mandatory download and deferred request		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• HTTP (see IETF RFC 7230 [38])</li> <li>• TLS (see IETF RFC 8446 [39])</li> <li>• SSL (see IETF RFC 6101 [40])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDData-Client_ONN-MCDData-FD-SP (clause 6.2)</li> <li>• MCDData-Part_ONN-MCDData-FD-SP, MCDData-Part_AFFIL (clause 6.9)</li> <li>• MCDData-Ctrl_ONN-MCDData-FD-SP, MCDData-Ctrl_GMS (clause 6.10)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• FD download request without mandatory download already sent and delivered by the controlling</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	FD request without mandatory download ie
	2	check	The MCDData client notifies the User and starts the timer
	3	check	Notification of Download Request Deferred sent back to the participating
	4	check	Notification sent to the originating participating from the controlling
	5	check	Notification of deferred download received at the MCDData client A
	6	stimulus	Client B finally requests the download of the the file
	7	check	MCDData Client B downloads the file from (through) the MSF
	8	check	Download completed notification sent from MCDData Client B
	9	check	Notification arrive at the controlling from the originating
	10	check	Notification sent to the originating participating from the controlling
	11	verify	Notification of completed download received at the MCDData client A

## 7.2.72 Request a list of deferred group communications [CONN-MCDATA/ONN/DEFER/01]

Clause 11.3 in ETSI TS 124 282 [8] defines the mechanism to request and receive the list of deferred group communications. The MCDATA server has temporarily stored data for the deferred data group communications e.g. due to recipient MCDATA client deferred to download. MCDATA user initiates the request to get the list of temporarily stored data for the deferred data group communications on the MCDATA server.

In order to do so the Client, according to clause 11.3.2, shall build the SIP MESSAGE request as specified in clause 6.2.4.1, including a DEFERRED DATA REQUEST message (as specified in clause 15.1.11.1) and the DEFERRED DATA GROUP COMM message in an application/vnd.3gpp.mcdata-signalling MIME body as specified in clause E.1. Finally, the SIP MESSAGE request will be sent towards the participating MCDATA function according to rules and procedures of ETSI TS 124 229 [6].

**NOTE:** Clause 11.3.3 is ambiguous regarding the role of the participating and controlling, a proposal is included where the participating forwards the SIP MESSAGE to the controlling which generates the responses and answers back.

Message Sequence Diagram

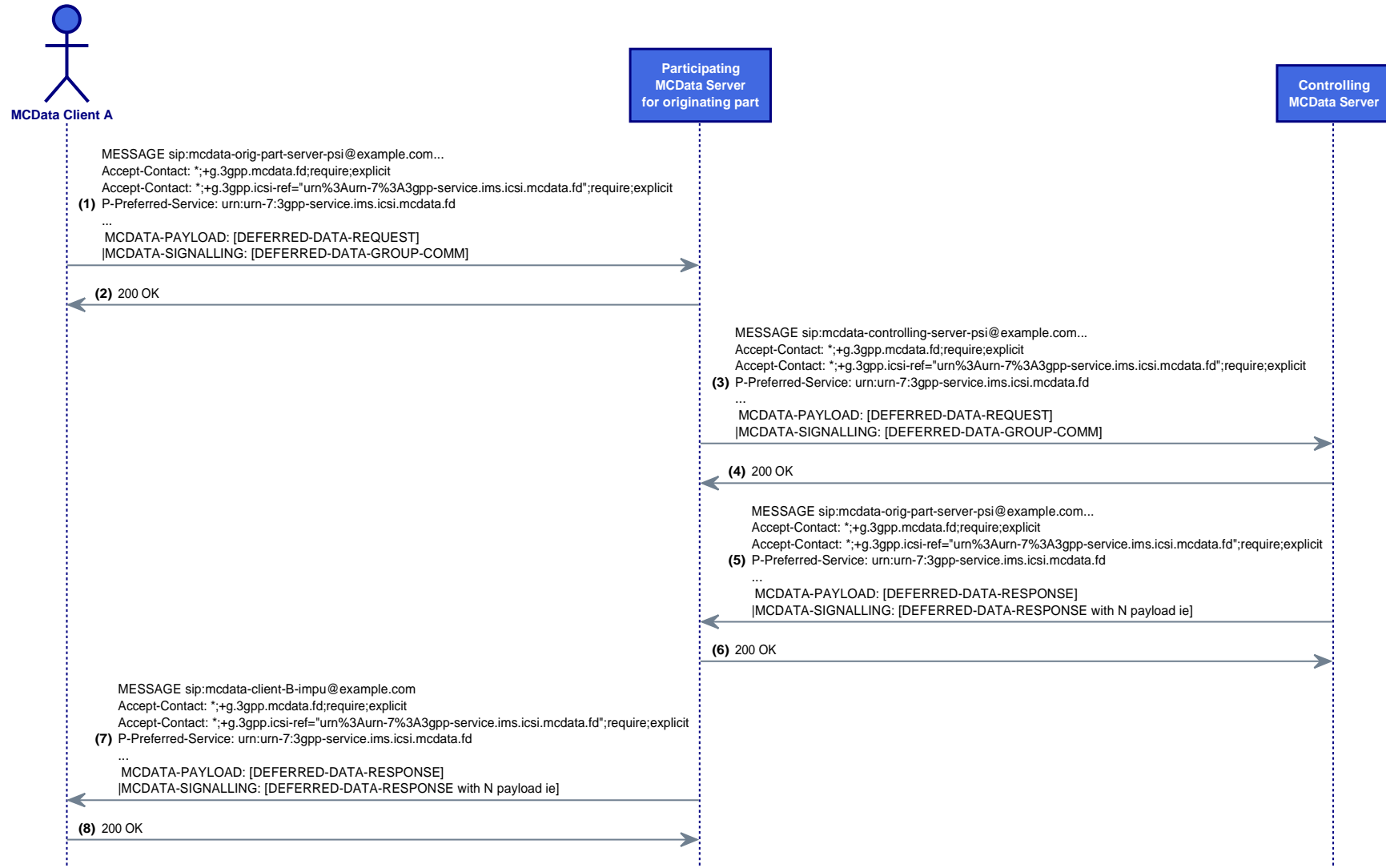


Figure 62n: CONN-MCDATA/ONN/DEFER/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 71n: CONN-MCDATA/ONN/DEFER/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCDATA/ONN/DEFER/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, retrieve list of deferred group communications		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• HTTP (see IETF RFC 7230 [38])</li> <li>• TLS (see IETF RFC 8446 [39])</li> <li>• SSL (see IETF RFC 6101 [40])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDATA-Client_ONN-MCDATA-FD-SP (clause 6.2)</li> <li>• MCDATA-Part_ONN-MCDATA-FD-SP, MCDATA-Part_AFFIL (clause 6.9)</li> <li>• MCDATA-Ctrl_ONN-MCDATA-FD-SP, MCDATA-Ctrl_GMS (clause 6.10)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• The controlling server gets track of the list of deferred group communications</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	Request to check list of deferred group communication
	2	check	The MCDATA client sends a properly formatted SIP MESSAGE to the participating
	3	check	Message forwarded to the controlling and 200 OK replied
	4	check	Controlling confirms the reception of the message with 200 OK and generates the DEFERRED DATA RESPONSE with n ie (one per deferred group communications)
	5	check	Response forwarded by the participating to the MCDATA Client
	6	verify	Message received at the MCDATA client A (properly acked with a 200 OK)

### 7.2.73 Send an enhanced status to an MCDATA group [CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/SIP/02]

Enhanced status corresponds to information specific to the activities performed by the mission critical service users during their operation(s) e.g. available, in operation on site, going to the operation site, or just arrived. Such enhanced status information shall be configured by the MCDATA administrator on a per-group basis and will be part of the MCDATA group configuration data in group configuration data in the GMS.

NOTE: That Observer test case O7.1 covers an equivalent procedure.



Clause 14 in ETSI TS 124 282 [8] describes the whole Enhanced Status mechanism. As described in 14.2.1 the MCDData Client, upon receiving a request from the MCDData user to send an enhanced status to an MCDData group and, after checking that the <mcddata-allow-enhanced-status> element under the <list-service> element as defined in ETSI TS 124 481 [11] is set to "true", shall use the "id" attribute of the MCDData user selected operation value from <mcddata-enhanced-status-operational-values> element under <list-service> element as defined in ETSI TS 124 481 [11], to generate a group standalone SDS message by following the procedure described in clause 9.2.2.2.1 and covered in [CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/SIP/01] (7.2.42). The associated Payload content type "Enhanced Status" is codified according to Table 15.2.13-2 with the included value that of the ID selected from the group document.

The later roles of the participating and controlling will be the same as in [CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/SIP/01] (7.2.42).

Message Sequence Diagram

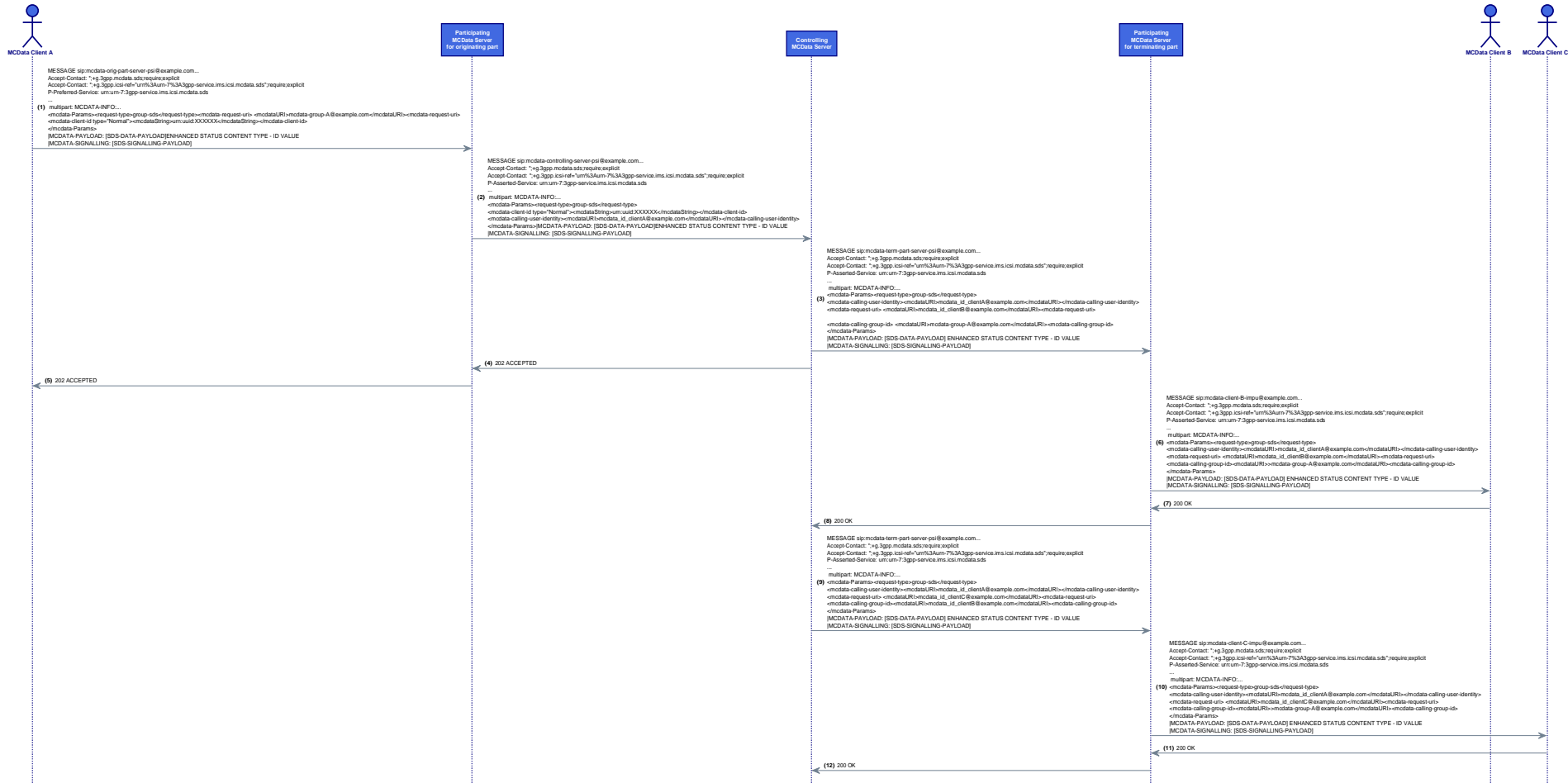


Figure 62o: CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/SIP/02 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 71o: CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/SIP/02 ITD**

<b>Interoperability Test Description</b>			
<b>Identifier</b>	CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/SIP/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, submission and reception of enhanced status SDS		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• HTTP (see IETF RFC 7230 [38])</li> <li>• TLS (see IETF RFC 8446 [39])</li> <li>• SSL (see IETF RFC 6101 [40])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCDATA-Client_ONN-MCDATA-FD-SP (clause 6.2)</li> <li>• MCDATA-Part_ONN-MCDATA-FD-SP, MCDATA-Part_AFFIL (clause 6.9)</li> <li>• MCDATA-Ctrl_ONN-MCDATA-FD-SP, MCDATA-Ctrl_GMS (clause 6.10)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Per group preset values for enhanced status stored</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User selects a preset message from the group document to send to the group
	2	check	The MCDATA client sends a properly formatted SIP MESSAGE with the standalone SDS data for the group to the participating with the ID of the enhanced status message selected
	3	check	MESSAGE sent to the participating
	4	check	Participating acknowledges the MESSAGE and forwards it to the controlling
	5	check	Controlling sends back 202
	6	check	SIP message forwarded "n" times from the controlling to the terminating responsible for each group member
	7	verify	SDS o2o standalone message with enhanced status properly received and decoded by User 2 mcddata_id_clientB@example.com and User 3 mcddata_id_clientC@example.com

### 7.2.74 MCVideo User upgrades an ongoing on-demand Chat Group Call to emergency call [CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/02]

This test covers the upgrade to emergency chat Group Call during an in-progress chat Group Call as defined in CONN-MCVideo/ONN/GROUP/CHAT/ONDEM/NFC/01 (clause 7.2.57).

There, the initial steps are totally equivalent but, upon a new risk or incident the MCVideo User triggers the emergency upgrade mechanism according to clauses 9.2.2.2.1.4, 9.2.2.2.1.2, 9.2.2.3.1.2, 9.2.2.3.1.4 and 9.2.2.4.1.2 in ETSI TS 124 281 [9].

A re-INVITE is triggered with the <emergency-ind> element (see clause 7.2.2 for more info) but with the proper <session-type> chat element.

The re-INVITE will be sent from the controlling function to all affiliated and joined members. Additionally, in case there are affiliated but not joined members of the group, the controlling function shall send a new INVITE to them so that they are requested to join the group.

Message Sequence Diagram

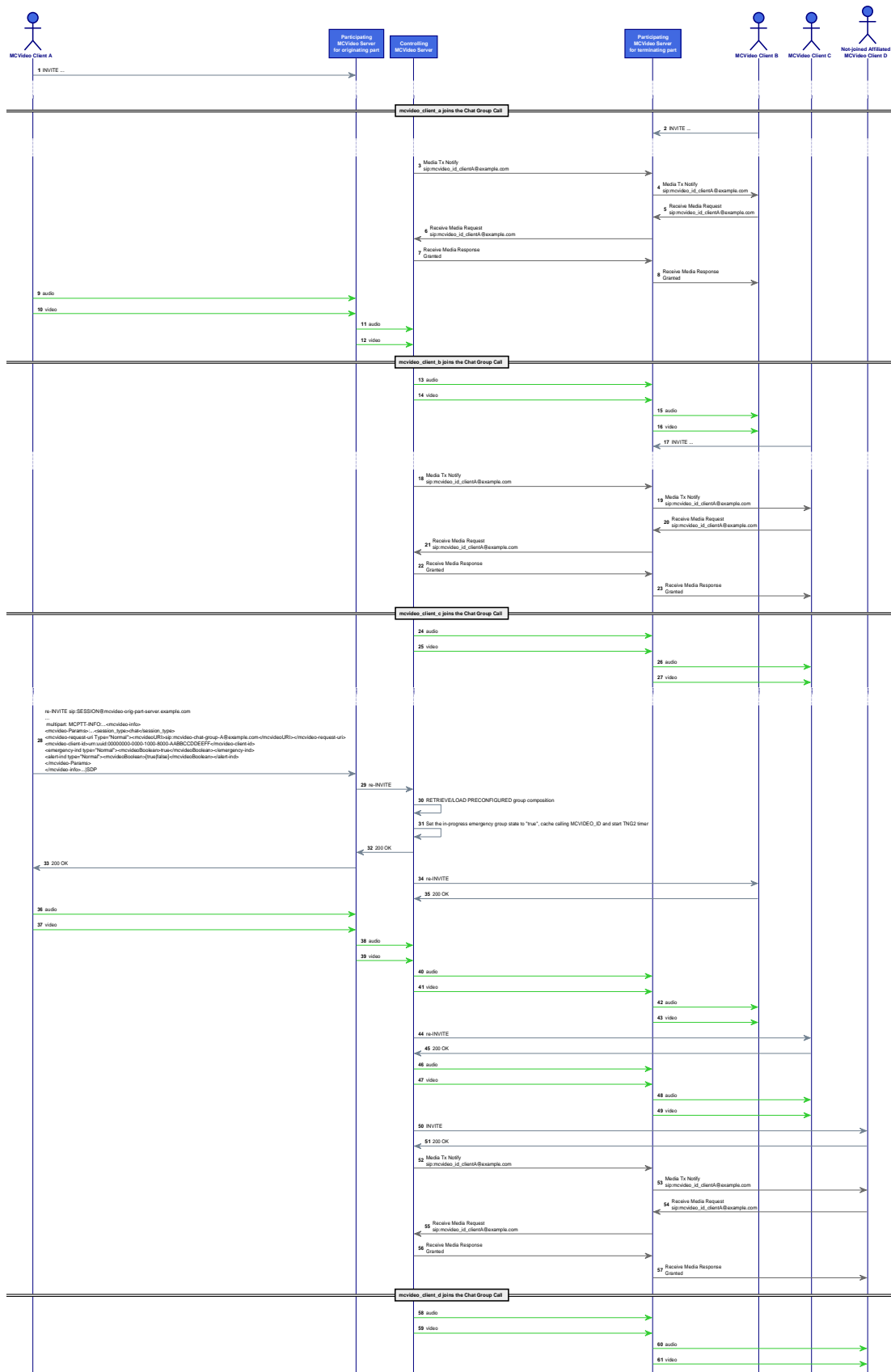


Figure 62p: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/02 Message Sequence

## Message Details

[4] re-INVITE MCVideo Caller/UE --> MCVideo Participating

```
[re]INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn:urn-7:3A3gpp-
service.ims.icsi.mcvideo";+g.3gpp.mcvideo
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn:urn-7:3A3gpp-service.ims.icsi.mcvideo ";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
P-Preferred-Identity: <sip:mcvideo-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]
```

--[boundary]

Content-Type: application/sdp

v=0

o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP

s=-

c=IN IP4 IP t=0 0

m=audio AUDIO\_PORT RTP/AVP 105

i=audio component of MCVideo

a=rtpmap:105 AMR-WB/16000/1

a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0

aptime:20 a=maxptime:240

m=video VIDEO\_PORT RTP/AVP 97

i=video component of MCVideo

a=rtpmap:97 H264/90000 a=fmtp:97 profile-level-id=640c1f;max-fps=3000

a=sendrecv

a=direction:both

m=application TC\_PORT udp MCVideo

a=fmtp:MCVideo mc\_queueing;mc\_priority=5;mc\_granted;mc\_implicit\_request

...

--[boundary]

Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>

<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-instance">

<mcvideo-Params>

<session-type>chat</session-type>

<mcvideo-request-uri type="Normal">

<mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>

</mcvideo-request-uri>

<mcvideo-client-id type="Normal">

<mcvideoString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcvideoString>

</mcvideo-client-id>

<emergency-ind type="Normal"><mcvideoBoolean>>true</mcvideoBoolean> </emergency-ind>

<alert-ind type="Normal"><mcvideoBoolean>[true|false]</mcvideoBoolean> </alert-ind>

</mcvideo-Params>

</mcvideoinfo>

--[boundary]

[5] re-INVITE MCVideo Participating --> MCVideo Controlling

```
[re]INVITE sip:mcvideo-controlling-server-psi@example.com SIP/2.0
```

```
To: <sip:mcvideo-controlling-server-psi@example.com>
```

...

--[boundary]

Content-Type: application/sdp

...

--[boundary]

Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>

<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-instance">

<mcvideo-Params>

<session-type>chat</session-type>

<mcvideo-request-uri type="Normal">

<mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>

</mcvideo-request-uri>

```

<mcvideo-calling-user-id type="Normal">
  <mcvideoURI>sip:mcvideo_id_clientA@example.com</mcvideoURI>
</mcvideo-calling-user-id>
<emergency-ind type="Normal"><mcvideoBoolean>true</mcvideoBoolean> </emergency-ind>
<alert-ind type="Normal"><mcvideoBoolean>[true|false]</mcvideoBoolean> </alert-ind>
</mcvideo-Params>
</mcvideoinfo>
--[boundary]
...
...

```

## Interoperability Test Description

**Table 71p: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling SIP signalling for a Group Call that is upgraded to Emergency.		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario.</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers.</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system and users properly affiliated to the called chat group.</li> <li>• Ongoing on-demand chat Group Call where Clients A, B and C have joined (as in clause 7.2.9) while D has not.</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) sends a re-INVITE to notify an emergency condition
	2	check	re-INVITE received at the MCVIDEO participating server of mcvideo_id_clientA@example.com after traversing SIP core/IMS
	3	check	re-INVITE received at the MCVIDEO controlling server
	4	check	The MCVideo controlling server loads the affiliated members of the mcvideo-chat-group-A (either preconfigured or retrieved from the GMS) and, upon emergency indicator, sends re-INVITE to joined users (B and C) and a new INVITE to D
	5	verify	Call connected and multiple media flows exchanged

### 7.2.75 MCVideo User upgrades an ongoing on-demand Chat Group Call to imminent-peril call [CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/03]

This test covers the upgrade to imminent-peril chat Group Call during an in-progress chat Group Call as defined in CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/01 (clause 7.2.9).

There, the initial steps are also equivalent to clause 7.2.10 but, upon a new risk or incident the MCPTT User triggers the imminent-peril upgrade mechanism according to clauses 9.2.2.2.1.4, 9.2.2.2.1.2, 9.2.2.3.1.2, 9.2.2.3.1.4 and 9.2.2.4.1.3 in ETSI TS 124 281 [9].

A re-INVITE is triggered with the <imminentperil-ind> element (see clause 7.2.3 for more info) with the proper <session-type> chat element. The controlling function shall update the group state according to the new condition. Later, the re-INVITE shall be sent from the controlling function to all joined affiliated members.

Additionally, in case there are affiliated but not joined members of the group, the controlling function shall send a new INVITE to them so that they are requested to join the group.



Message Sequence Diagram

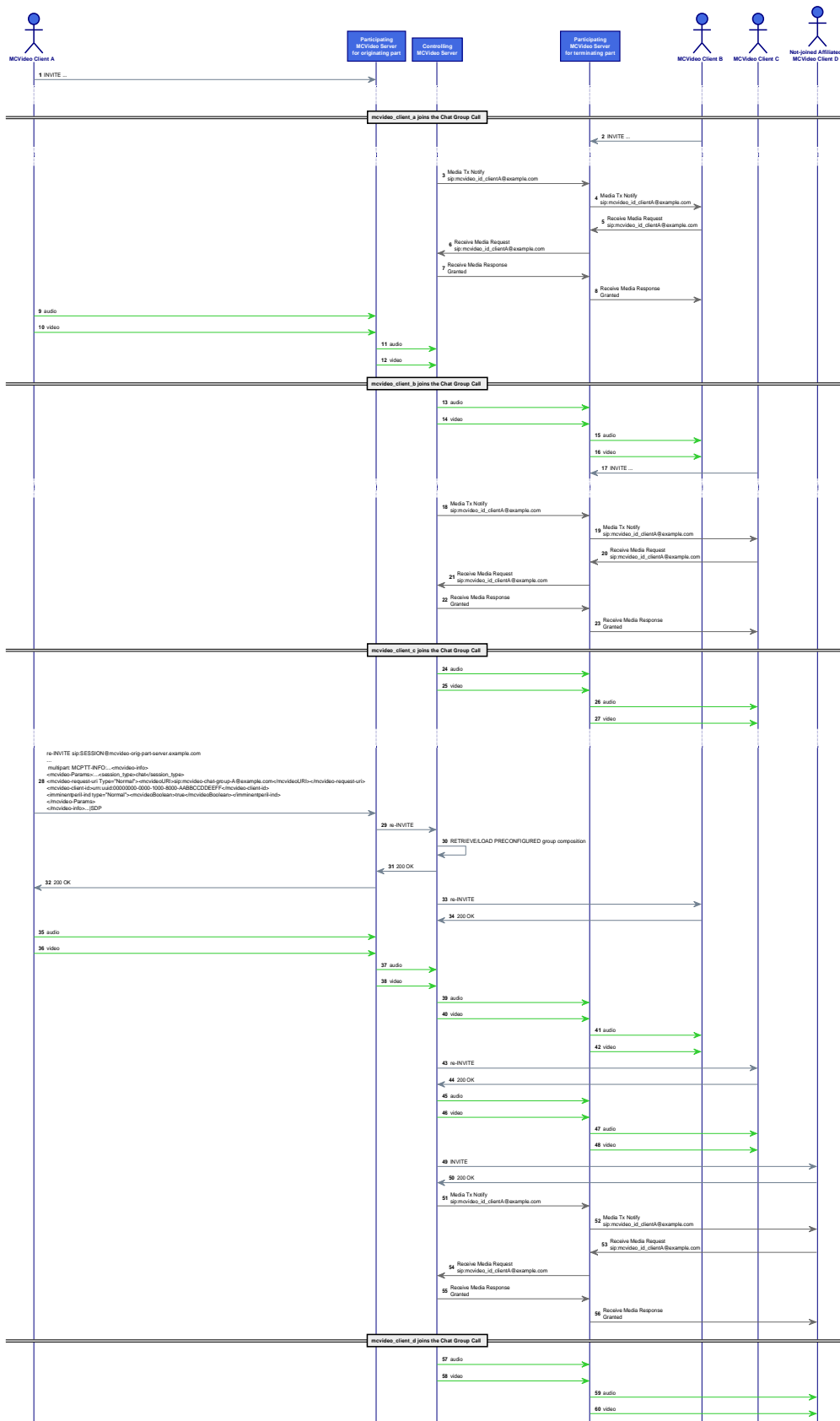


Figure 62q: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/03 Message Sequence

## Message Details

[4] re-INVITE MCVideo Caller/UE --> MCVideo Participating

```
[re]INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn:urn-7:3A3gpp-
service.ims.icsi.mcvideo";+g.3gpp.mcvideo
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn:urn-7:3A3gpp-service.ims.icsi.mcvideo ";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
P-Preferred-Identity: <sip:mcvideo-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]
```

--[boundary]

Content-Type: application/sdp

v=0

o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP

s=-

c=IN IP4 IP t=0 0

m=audio AUDIO\_PORT RTP/AVP 105

i=audio component of MCVideo

a=rtpmap:105 AMR-WB/16000/1

a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0

a=ptime:20 a=maxptime:240

m=video VIDEO\_PORT RTP/AVP 97

i=video component of MCVideo

a=rtpmap:97 H264/90000 a=fmtp:97 profile-level-id=640c1f;max-fps=3000

a=sendrecv

a=direction:both

m=application TC\_PORT udp MCVideo

a=fmtp:MCVideo mc\_queueing;mc\_priority=5;mc\_granted;mc\_implicit\_request

...

--[boundary]

Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>

<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-instance">

<mcvideo-Params>

<session-type>chat</session-type>

<mcvideo-request-uri type="Normal">

<mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>

</mcvideo-request-uri>

<mcvideo-client-id type="Normal">

<mcvideoString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcvideoString>

</mcvideo-client-id>

<imminentperil-ind type="Normal"><mcvideoBoolean>true</mcvideoBoolean> </imminentperil-ind>

</mcvideo-Params>

</mcvideoinfo>

--[boundary]

[5] re-INVITE MCVideo Participating --> MCVideo Controlling

```
[re]INVITE sip:mcvideo-controlling-server-psi@example.com SIP/2.0
```

```
To: <sip:mcvideo-controlling-server-psi@example.com>
```

...

--[boundary]

Content-Type: application/sdp

...

--[boundary]

Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>

<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-instance">

<mcvideo-Params>

<session-type>chat</session-type>

<mcvideo-request-uri type="Normal">

<mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>

</mcvideo-request-uri>

<mcvideo-calling-user-id type="Normal">

```

    <mcvideoURI>sip:mcvideo_id_clientA@example.com</mcvideoURI>
    </mcvideo-calling-user-id>
    <imminentperil-ind type="Normal"><mcvideoBoolean>true</mcvideoBoolean> </imminentperil-ind>
  </mcvideo-Params>
</mcvideoinfo>
--[boundary]
...
...

```

## Interoperability Test Description

Table 71q: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/03 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/03		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling SIP signalling for a Group Call that is upgraded to Imminent Peril.		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario.</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers.</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system and users properly affiliated to the called chat group.</li> <li>• Ongoing on-demand chat Group Call where Clients A, B and C have joined (as in clause 7.2.9) while D has not.</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) sends a re-INVITE to notify an imminent-peril condition
	2	check	re-INVITE received at the MCVIDEO participating server of mcvideo_id_clientA@example.com after traversing SIP core/IMS
	3	check	re-INVITE received at the MCVIDEO controlling server
	4	check	The MCVideo controlling server loads the affiliated members of the mcvideo-chat-group-A (either preconfigured or retrieved from the GMS) and, upon imminent-peril indicator, sends re-INVITE to joined users (B and C) and a new INVITE to D
	5	verify	Call still connected and imminent-peril state set in all elements

### 7.2.76 MCVideo User cancels the emergency condition of an on-demand Chat Group Call [CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/04]

This test covers the cancellation by a User of the in-progress emergency condition of a Chat Group Call.

Upon receiving such a request the MCVideo client shall set the group state to the proper states (MVEG 1: no-emergency and MVEGC 1: emergency-gc-capable) and generate a SIP re-INVITE request with the new indicators in the mcvideo-info XML body according to clause 9.2.2.2.1.3 in ETSI TS 124 281 [7]. The controlling function shall forward the re-INVITE to all the affiliated and joined members of the group and shall send a MESSAGE to any possible affiliated but not joined members.

The effect of (un)successful implicit affiliation, limitation on maximum number of users or ongoing sessions is not considered.

Message Sequence Diagram

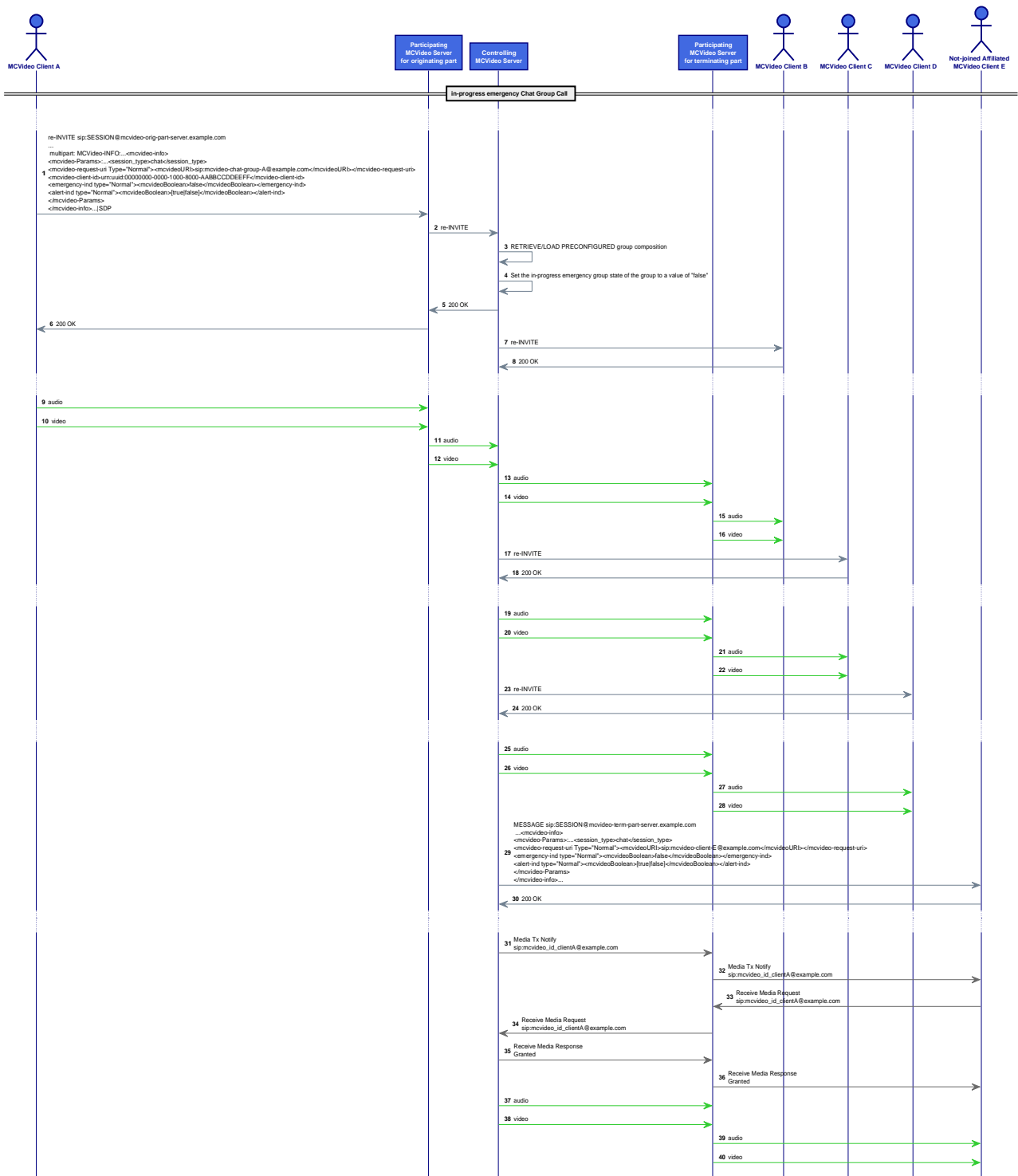


Figure 62r: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/04 Message Sequence

## Message Details

```
[1] re-INVITE MCVideo Caller/UE --> MCVideo Participating

[re]INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcvideo";+g.3gpp.mcvideo
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcvideo ";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
P-Preferred-Identity: <sip:mcvideo-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]

--[boundary]
Content-Type: application/sdp

v=0
o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP t=0 0
m=audio AUDIO_PORT RTP/AVP 105
i=audio component of MCVideo
a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20 a=maxptime:240
m=video VIDEO_PORT RTP/AVP 97
i=video component of MCVideo
a=rtpmap:97 H264/90000 a=fmtp:97 profile-level-id=640c1f;max-fps=3000
a=sendrecv
a=direction:both
m=application TC_PORT udp MCVideo
a=fmtp:MCVideo mc_queueing;mc_priority=5;mc_granted;mc_implicit_request
...

--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
  <mcvideo-Params>
    <session-type>chat</session-type>
    <mcvideo-request-uri type="Normal">
      <mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>
    </mcvideo-request-uri>
    <mcvideo-client-id type="Normal">
      <mcvideoString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcvideoString>
    </mcvideo-client-id>
    <emergency-ind type="Normal"><mcvideoBoolean>>false</mcvideoBoolean> </emergency-ind>
    <alert-ind type="Normal"><mcvideoBoolean>[true|false]</mcvideoBoolean> </alert-ind>
  </mcvideo-Params>
</mcvideoinfo>
--[boundary]

[13] MESSAGE MCVideo-Participating --> Affiliated but not joined User
MESSAGE sip:SESSION@mcvideo-term-part-server.example.com

Content-Type: application/vnd.3gpp.mcvideo-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
  <mcvideo-Params>
    <session-type>chat</session-type>
    <mcvideo-request-uri type="Normal">
      <mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>
    </mcvideo-request-uri>
    <mcvideo-calling-user-id type="Normal">
      <mcvideoURI>sip:mcvideo_id_clientA@example.com</mcvideoURI>
    </mcvideo-calling-user-id>
    <emergency-ind type="Normal"><mcvideoBoolean>>false</mcvideoBoolean> </emergency-ind>
    <alert-ind type="Normal"><mcvideoBoolean>[true|false]</mcvideoBoolean> </alert-ind>
  </mcvideo-Params>
</mcvideoinfo>
```

## Interoperability Test Description

Table 71r: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/04 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/04		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of cancellation of the in-progress emergency condition of a chat Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system and users properly affiliated to the called chat group.</li> <li>• Ongoing on-demand emergency chat Group Call.</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) sends a re-INVITE to notify the ongoing chat Group Call losing the emergency conditions
	2	check	re-INVITE received at participating server of mcvideo_id_clientA@example.com after traversing SIP core/IMS
	3	check	re-INVITE received at the MCVideo controlling server
	4	check	The MCVideo controlling server loads the joined members of the mcvideo-chat-group-A and sends re-INVITE to all of them
	5	check	The MCVideo controlling server sends a SIP MESSAGE to affiliated but not joined members
	6	verify	Call still connected and emergency state "removed" in all elements

### 7.2.77 MCVideo User cancels the imminent-peril condition of an on-demand Chat Group Call [CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/05]

This test covers the cancellation by a User of the in-progress imminent-peril condition of a Chat Group Call.

Upon receiving such a request the MCVideo client shall set the group state to the proper states (MVIG 1: no-imminent-peril and MVIGC 1: imminent-peril-gc-capable) and generate a SIP re-INVITE request with the new indicators in the mcptt-info XML body according to clause 9.2.2.2.1.5 in ETSI TS 124 281 [9].

The controlling function shall forward the re-INVITE to all the affiliated and joined members of the group and shall send a MESSAGE to any possible affiliated but not joined members.

Message Sequence Diagram

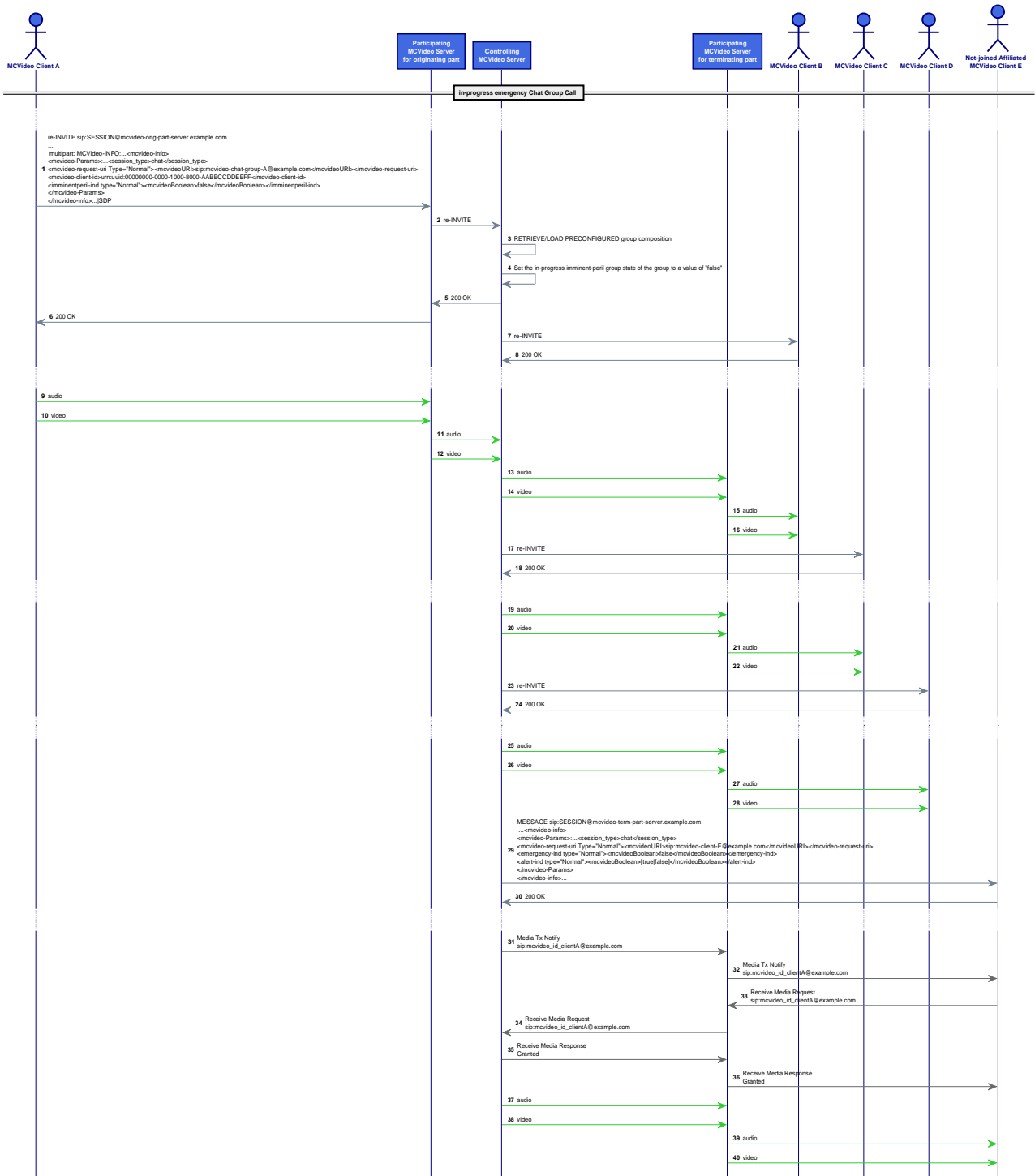


Figure 62s: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/05 Message Sequence



## Message Details

[1] re-INVITE MCVideo Caller/UE --> MCVideo Participating

```
[re]INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcvideo";+g.3gpp.mcvideo
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcvideo ";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
P-Preferred-Identity: <sip:mcvideo-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]
```

```
--[boundary]
Content-Type: application/sdp
```

```
v=0
o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP t=0 0
m=audio AUDIO_PORT RTP/AVP 105
i=audio component of MCVideo
a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20 a=maxptime:240
m=video VIDEO_PORT RTP/AVP 97
i=video component of MCVideo
a=rtpmap:97 H264/90000 a=fmtp:97 profile-level-id=640c1f;max-fps=3000
a=sendrecv
a=direction:both
m=application TC_PORT udp MCVideo
a=fmtp:MCVideo mc_queueing;mc_priority=5;mc_granted;mc_implicit_request
...
```

```
--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml
```

```
<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
  <mcvideo-Params>
    <session-type>chat</session-type>
    <mcvideo-request-uri type="Normal">
      <mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>
    </mcvideo-request-uri>
    <mcvideo-client-id type="Normal">
      <mcvideoString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcvideoString>
    </mcvideo-client-id>
    <imminentperil-ind type="Normal"><mcvideoBoolean>>false</mcvideoBoolean> </imminentperil-ind>
  </mcvideo-Params>
</mcvideoinfo>
--[boundary]
```

[13] MESSAGE MCVideo-Participating --> Affiliated but not joined User  
MESSAGE sip:SESSION@mcvideo-term-part-server.example.com

```
Content-Type: application/vnd.3gpp.mcvideo-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
  <mcvideo-Params>
    <session-type>chat</session-type>
    <mcvideo-request-uri type="Normal">
      <mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>
    </mcvideo-request-uri>
    <mcvideo-calling-user-id type="Normal">
      <mcvideoURI>sip:mcvideo_id_clientA@example.com</mcvideoURI>
    </mcvideo-calling-user-id>
    <imminentperil-ind type="Normal"><mcvideoBoolean>>false</mcvideoBoolean> </imminentperil-ind>
  </mcvideo-Params>
</mcvideoinfo>
```

## Interoperability Test Description

**Table 71s: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/05 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/05		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of cancellation of the in-progress imminent-peril condition of a chat Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system and users properly affiliated to the called chat group.</li> <li>• Ongoing on-demand imminent-peril chat Group Call.</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) sends a re-INVITE to notify the ongoing chat Group Call losing the imminent-peril conditions
	2	check	re-INVITE received at participating server of mcvideo_id_clientA@example.com after traversing SIP core/IMS
	3	check	re-INVITE received at the MCVideo controlling server
	4	check	The MCVideo controlling server loads the joined members of the mcvideo-chat-group-A and sends re-INVITE to all of them
	5	check	The MCVideo controlling server sends a SIP MESSAGE to affiliated but not joined members
	6	verify	Call still connected and imminent-peril state "removed" in all elements

### 7.2.78 MCVideo User initiates an on-demand prearranged MCVideo Group Call: Emergency Group Call [CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/02]

The test is equivalent to CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/01 (clause 7.2.56) but the calling user indicates that this is an Emergency Group Call.

Clauses 6.2.8.1.1 to 6.2.8.1.8 and 6.2.8.1.13 to 6.2.8.1.17 in ETSI TS 124 281 [7] describe the mechanisms involved in an Emergency Group Call handling including additional headers and elements (i.e. <mcvideo-Params> in the <mcvideo-info> element in the application/vnd.3gpp.mcvideo-info+xml MIME body).

Furthermore, Emergency Group Call requests and answers trigger changes to the emergency call state (i.e. from MVEGC 2: emergency-call-requested to MVEGC 3: emergency-call-granted) and the emergency alert state (i.e. MVEA 3: emergency-alert-initiated), internal states of the MCVIDEO client (and also groups) that are not shown in the diagrams and messages below.

Message Sequence Diagram

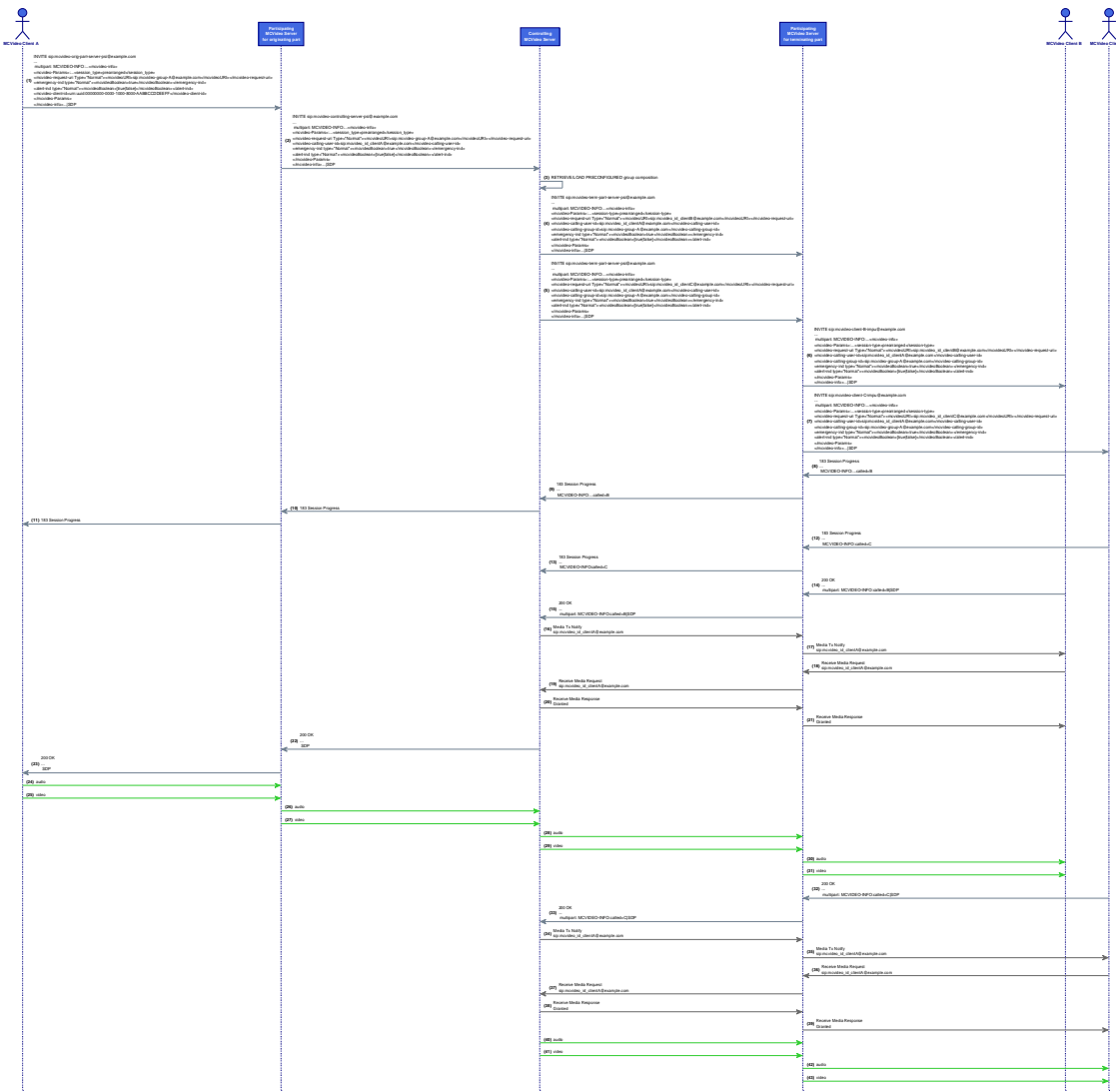


Figure 62t: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/02 Message Sequence

Message Details

[1] INVITE MCVideo Caller/UE --> MCVideo Participating

```
INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcvideo";+g.3gpp.mcvideo
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcvideo ";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
P-Preferred-Identity: <sip:mcvideo-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]
```

--[boundary]

```
Content-Type: application/sdp
v=0
o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP
s=
c=IN IP4 IP
t=0 0
m=audio AUDIO_PORT RTP/AVP 105
i=audio component of MCVideo
```

```

a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20 a=maxptime:240
m=video VIDEO_PORT RTP/AVP 97
i=video component of MCVideo
a=rtpmap:97 H264/90000
a=fmtp:97 profile-level-id=640c1f;max-fps=3000
a=sendrecv
a=direction:both
m=application TC_PORT udp MCVideo
a=fmtp:MCVideo mc_queueing;mc_priority=5;mc_granted;mc_implicit_request
...

--[boundary]

Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
  <mcvideo-Params>
    <session-type>prearranged</session-type>
    <mcvideo-request-uri type="Normal">
      <mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>
    </mcvideo-request-uri>
    <emergency-ind type="Normal"><mcvideoBoolean>>true</mcvideoBoolean>
    </emergency-ind>
    <alert-ind type="Normal"><mcvideoBoolean>[true|false]</mcvideoBoolean></alert-ind>
    <mcvideo-client-id type="Normal">
      <mcvideoString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcvideoString>
    </mcvideo-client-id>
  </mcvideo-Params>
</mcvideoinfo>

--[boundary]

[2] INVITE MCVideo Participating --> MCVideo Controlling

INVITE sip:mcvideo-controlling-server-psi@example.com SIP/2.0
To: <sip:mcvideo-controlling-server-psi@example.com>
...

--[boundary]

Content-Type: application/sdp
...
--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
  <mcvideo-Params>
    <session-type>prearranged</session-type>
    <mcvideo-request-uri type="Normal">
      <mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>
    </mcvideo-request-uri>
    <mcvideo-calling-user-id type="Normal">
      <mcvideoURI>sip:mcvideo_id_clientA@example.com</mcvideoURI>
    </mcvideo-calling-user-id>
    <emergency-ind type="Normal"><mcvideoBoolean>>true</mcvideoBoolean></emergency-ind>
    <alert-ind type="Normal"><mcvideoBoolean>[true|false]</mcvideoBoolean></alert-ind>
  </mcvideo-Params>
</mcvideoinfo>

--[boundary] ...
...

```

## Interoperability Test Description

Table 71t: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/02 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand emergency Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system</li> <li>• Calling user is affiliated to the called group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) initiates an emergency Group Call to mcvideogroup-A by setting the proper elements in the mcvideo-info MIME body
	2	check	INVITE received at participating server of mcvideo_id_clientA@example.com
	3	check	INVITE received at controlling server
	4	check	Controlling server loads the affiliated members of mcvideogroup-A and creates an INVITE per each of the "n" members
	5	check	"n" INVITEs received at participating servers of each mcvideo_id_clientX (where X:1..n)
	6	check	"n" INVITEs received at affiliated mcvideo_id_clientX
	7	check	"n" SIP dialogs established
	8	check	"n" Media Tx Notify received at participating servers
	9	check	"n" Media Tx Notify received at affiliated mcvideo_id_clientX
	10	check	"n" Receivers accept the media with a Receive Media Request
	11	check	"n" Receive Media Request received at participating servers
	12	check	"n" Receive Media Request received at controlling server
	13	check	"n" controlling server sends Receive Media Response with result Granted
	14	check	"n" Receive Media Response received at participating servers
	15	check	"n" Receive Media Response received at each mcvideo_id_clientX
	16	verify	Call connected and multiple media flows exchanged

### 7.2.79 MCVideo User initiates an on-demand prearranged MCVideo Group Call: Imminent Peril Group Call [CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/03]

The test is equivalent to CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NFC/01 (clause 7.2.56) but the calling user indicates that this is an Imminent Peril Group Call.

Clauses 6.2.8.1.9 to 6.2.8.1.12 in ETSI TS 124 281 [7] indicate the mechanisms involved in an Imminent Peril Group Call. Initially, the MCVIDEO Client sets the <imminentperil-ind> element in the MIME mcvideo-info body (within the mcvideo-Params element) to "true". Furthermore, Imminent Peril Group Call requests and answers trigger changes to the imminent Peril Group Call state (i.e. from MVIGC 2: imminent-peril-call requested to MVIGC 3: imminent-peril-call-granted).

Message Sequence Diagram

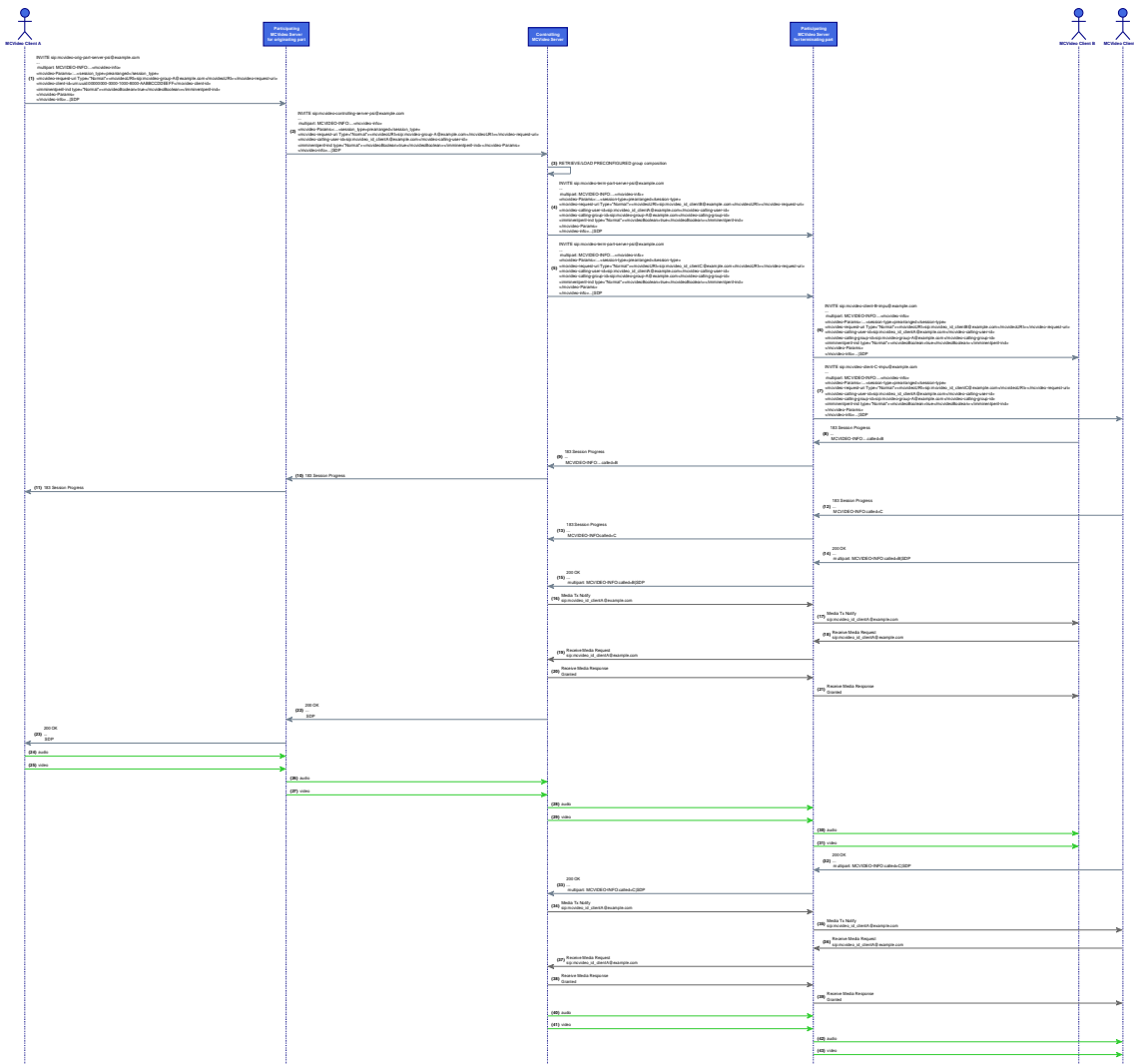


Figure 62u: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/03 Message Sequence

Message Details

[1] INVITE MCVideo Caller/UE --> MCVideo Participating

```

INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcvideo";+g.3gpp.mcvideo
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcvideo ";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
P-Preferred-Identity: <sip:mcvideo-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]

--[boundary]
Content-Type: application/sdp
    
```

```

v=0
o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP t=0 0
m=audio AUDIO_PORT RTP/AVP 105
i=audio component of MCVideo
a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
    
```

```

a=ptime:20 a=maxptime:240
m=video VIDEO_PORT RTP/AVP 97
i=video component of MCVideo
a=rtpmap:97 H264/90000
a=fmtp:97 profile-level-id=640c1f;max-fps=3000
a=sendrecv
a=direction:both
m=application TC_PORT udp MCVideo
a=fmtp:MCVideo mc_queueing;mc_priority=5;mc_granted;mc_implicit_request
...

--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
  <mcvideo-Params>
    <session-type>prearranged</session-type>
    <mcvideo-request-uri type="Normal">
      <mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>
    </mcvideo-request-uri>
    <imminentperil-ind type="Normal"><mcvideoBoolean>true</mcvideoBoolean></imminentperil-ind>
  <mcvideo-client-id type="Normal">
    <mcvideoString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcvideoString>
  </mcvideo-client-id>
</mcvideo-Params>
</mcvideoinfo>
--[boundary]

[2] INVITE MCVideo Participating --> MCVideo Controlling

INVITE sip:mcvideo-controlling-server-psi@example.com SIP/2.0
To: <sip:mcvideo-controlling-server-psi@example.com>
...

--[boundary]
Content-Type: application/sdp
...
--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
  <mcvideo-Params>
    <session-type>prearranged</session-type>
    <mcvideo-request-uri type="Normal">
      <mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>
    </mcvideo-request-uri>
    <mcvideo-calling-user-id type="Normal">
      <mcvideoURI>sip:mcvideo_id_clientA@example.com</mcvideoURI>
    </mcvideo-calling-user-id>
    <imminentperil-ind type="Normal"><mcvideoBoolean>true</mcvideoBoolean></imminentperil-ind>
  </mcvideo-Params>
</mcvideoinfo>

--[boundary]
...
...

```

## Interoperability Test Description

Table 71u: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/03 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/03		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of an Imminent Peril pre-arranged on demand Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system</li> <li>• Calling user is affiliated to the called group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) initiates an Imminent Peril Group Call to mcvideo-group-A by setting proper elements in the mcvideo-info MIME body
	2	check	INVITE received at participating server of mcvideo_id_clientA@example.com
	3	check	INVITE received at controlling server
	4	check	Controlling server loads the affiliated members of mcvideogroup-A and creates an INVITE per each of the "n" members
	5	check	"n" INVITEs received at participating servers of each mcvideo_id_clientX (where X:1..n)
	6	check	"n" INVITEs received at affiliated mcvideo_id_clientX
	7	check	"n" SIP dialogs established
	8	check	"n" Media Tx Notify received at participating servers
	9	check	"n" Media Tx Notify received at affiliated mcvideo_id_clientX
	10	check	"n" Receivers accept the media with a Receive Media Request
	11	check	"n" Receive Media Request received at participating servers
	12	check	"n" Receive Media Request received at controlling server
	13	check	"n" controlling server sends Receive Media Response with result Granted
	14	check	"n" Receive Media Response received at participating servers
	15	check	"n" Receive Media Response received at each mcvideo_id_clientX
	16	verify	Call connected and multiple media flows exchanged

## 7.2.80 MCVideo User initiates an on-demand prearranged MCVideo Group Call: Broadcast Group Call [CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/04]

The test is equivalent to CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NFC/01 (clause 7.2.56) but the calling user indicates that this is a Broadcast Group Call.

Clause 6.2.8.2 in ETSI TS 124 281 [7] indicates the mechanisms involved in an Broadcast Group Call. Initially, the MCVIDEO Client sets the <broadcast-ind> element in the MIME mcvideo-info body (within the mcvideo-Params element) to "true". The handling of the call is basically the same as other Group Calls but only the call originating MCVIDEO user is allowed to transmit media and if the media transmission from call originating MCVIDEO user is complete, the broadcast Group Call is released (see clause 7.1.2.4 in ETSI TS 123 281 [3] for more details).



Message Sequence Diagram

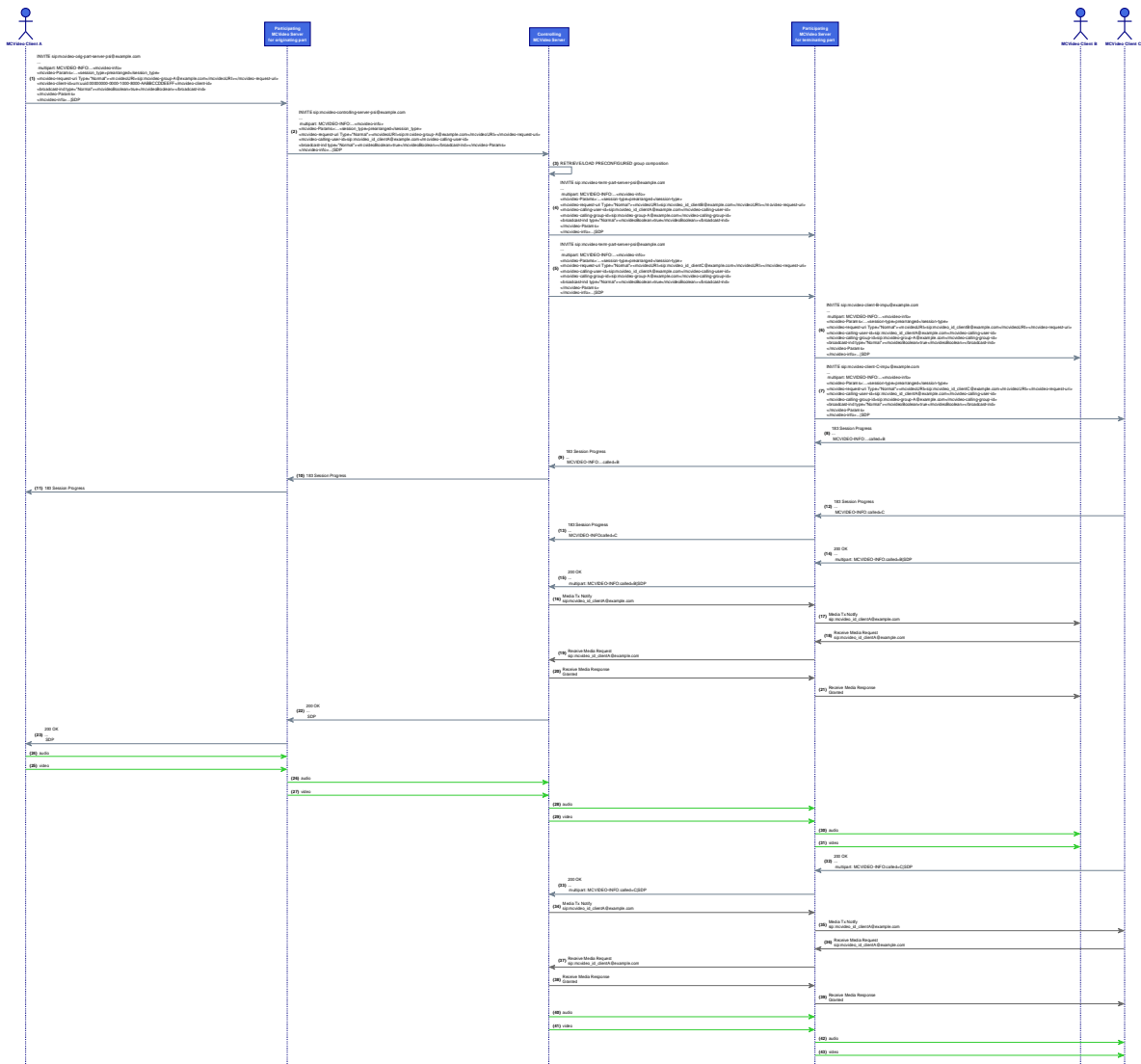


Figure 62v: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/04 Message Sequence

Message Details

[1] INVITE MCVideo Caller/UE --> MCVideo Participating

```
INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcvideo";+g.3gpp.mcvideo
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcvideo ";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
P-Preferred-Identity: <sip:mcvideo-clientA@example.com>
Answer-Mode: Manual
Resource-Priority: mcpttp.5
Content-Type: multipart/mixed; boundary=[boundary]
```

```
--[boundary]
Content-Type: application/sdp
```

```
v=0
o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP
S=-
c=IN IP4 IP t=0 0
m=audio AUDIO_PORT RTP/AVP 105
i=audio component of MCVideo
```

```

a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20 a=maxptime:240
m=video VIDEO_PORT RTP/AVP 97
i=video component of MCVideo
a=rtpmap:97 H264/90000
a=fmtp:97 profile-level-id=640c1f;max-fps=3000
a=sendrecv
a=direction:both
m=application TC_PORT udp MCVideo
a=fmtp:MCVideo mc_queueing;mc_priority=5;mc_granted;mc_implicit_request
...

--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
  <mcvideo-Params>
    <session-type>prearranged</session-type>
    <mcvideo-request-uri type="Normal">
      <mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>
    </mcvideo-request-uri>
    <broadcast-ind type="Normal">true</broadcast-ind>
    <mcvideo-client-id type="Normal">
      <mcvideoString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcvideoString>
    </mcvideo-client-id>
  </mcvideo-Params>
</mcvideoinfo>
--[boundary]

[2] INVITE MCVideo Participating --> MCVideo Controlling

INVITE sip:mcvideo-controlling-server-psi@example.com SIP/2.0
To: <sip:mcvideo-controlling-server-psi@example.com>
...

--[boundary]
Content-Type: application/sdp
...
--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
  <mcvideo-Params>
    <session-type>prearranged</session-type>
    <mcvideo-request-uri type="Normal">
      <mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>
    </mcvideo-request-uri>
    <mcvideo-calling-user-id type="Normal">
      <mcvideoURI>sip:mcvideo_id_clientA@example.com</mcvideoURI>
    </mcvideo-calling-user-id>
    <broadcast-ind type="Normal">true</broadcast-ind>
  </mcvideo-Params>
</mcvideoinfo>

--[boundary]
...
...

```

## Interoperability Test Description

Table 71v: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/04 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/04		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of an Imminent Peril pre-arranged on demand Group Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system</li> <li>• Calling user is affiliated to the called group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) initiates a Broadcast Group Call to mcvideo-group-A by setting proper elements in the mcvideo-info MIME body
	2	check	INVITE received at participating server of mcvideo_id_clientA@example.com
	3	check	INVITE received at controlling server
	4	check	Controlling server loads the affiliated members of mcvideogroup-A and creates an INVITE per each of the "n" members
	5	check	"n" INVITEs received at participating servers of each mcvideo_id_clientX (where X:1..n)
	6	check	"n" INVITEs received at affiliated mcvideo_id_clientX
	7	check	"n" SIP dialogs established
	8	check	"n" Media Tx Notify received at participating servers
	9	check	"n" Media Tx Notify received at affiliated mcvideo_id_clientX
	10	check	"n" Receivers accept the media with a Receive Media Request
	11	check	"n" Receive Media Request received at participating servers
	12	check	"n" Receive Media Request received at controlling server
	13	check	"n" controlling server sends Receive Media Response with result Granted
	14	check	"n" Receive Media Response received at participating servers
	15	check	"n" Receive Media Response received at each mcvideo_id_clientX
	16	verify	Call connected and multiple media flows exchanged

## 7.2.81 MCVideo User initiates an on-demand prearranged MCVideo Group Call: Upgrade to in progress emergency or imminent peril [CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/05]

This test covers the upgrade to either emergency or imminent peril Group Call during an in-progress Group Call as defined in CONN-MCVIDEO-ONNGROUP-PREA-ONDEM-NTC-01 (clause 7.2.56).

There, the initial steps are totally equivalent but, upon a new risk or incident the MCVIDEO User triggers the emergency or imminent peril upgrade mechanism according to clauses 9.2.1.3.1.3 and 9.2.1.4.7 in ETSI TS 124 281 [7]). In both cases, a re-INVITE is triggered with the new <emergency-ind> or <imminentperil-ind> elements (see clauses 7.2.2 and 7.2.3 respectively for more info).

Message Sequence Diagram

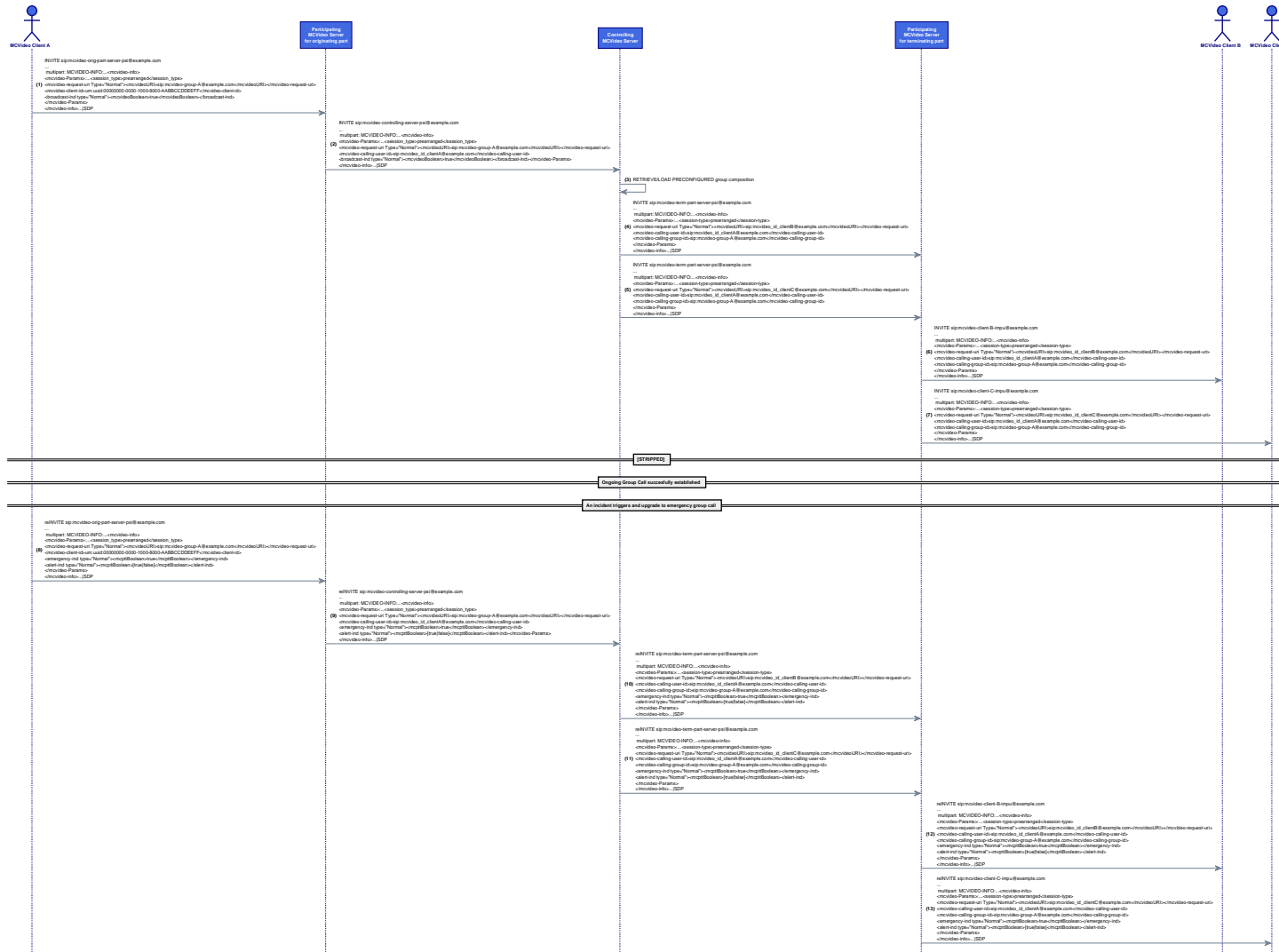


Figure 62w: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/05 Message Sequence

## Message Details

[8] re-INVITE MCVideo Caller/UE --> MCVideo Participating

[re]INVITE sip:SESSION@mcvideo-server-orig-part.example.com SIP/2.0

To: <sip:mcvideo-server-orig-part-psi@example.com>

Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3

A3gpp-service.ims.icsi.mcvideo";+g.3gpp.mcvideo

Accept-Contact: \*;+g.3gpp.mcvideo;require;explicit

Accept-Contact: \*;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcvideo ";require;explicit

P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo

P-Preferred-Identity: <sip:mcvideo-clientA@example.com>

Answer-Mode: Manual

Resource-Priority: mcpttp.5

Content-Type: multipart/mixed; boundary=[boundary]

--[boundary]

Content-Type: application/sdp

v=0

o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP

s=-

c=IN IP4 IP t=0 0

m=audio AUDIO\_PORT RTP/AVP 105

i=audio component of MCVideo

a=rtpmap:105 AMR-WB/16000/1

a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0

a=ptime:20 a=maxptime:240

m=video VIDEO\_PORT RTP/AVP 97

i=video component of MCVideo

a=rtpmap:97 H264/90000 a=fmtp:97 profile-level-id=640c1f;max-fps=3000

a=sendrecv

a=direction:both

m=application TC\_PORT udp MCVideo

a=fmtp:MCVideo mc\_queueing;mc\_priority=5;mc\_granted;mc\_implicit\_request

...

--[boundary]

Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>

<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-instance">

<mcvideo-Params>

<session-type>prearranged</session-type>

<mcvideo-request-uri type="Normal">

<mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>

</mcvideo-request-uri>

<mcvideo-client-id type="Normal">

<mcvideoString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcvideoString>

</mcvideo-client-id>

<emergency-ind type="Normal"><mcpttBoolean>true</mcpttBoolean></emergency-ind>

<alert-ind type="Normal"><mcpttBoolean>[true|false]</mcpttBoolean> </alert-ind>

</mcvideo-Params>

</mcvideoinfo>

--[boundary]

[9] re-INVITE MCVideo Participating --> MCVideo Controlling

[re]INVITE sip:mcvideo-controlling-server-psi@example.com SIP/2.0

To: <sip:mcvideo-controlling-server-psi@example.com>

...

--[boundary]

Content-Type: application/sdp

...

--[boundary]

Content-Type: application/vnd.3gpp.mcvideo-info+xml

<?xml version="1.0" encoding="UTF-8"?>

<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-instance">

<mcvideo-Params>

<session-type>prearranged</session-type>

<mcvideo-request-uri type="Normal">

<mcvideoURI>sip:mcvideo-group-A@example.com</mcvideoURI>

</mcvideo-request-uri>

```

<mcvideo-calling-user-id type="Normal">
  <mcvideoURI>sip:mcvideo_id_clientA@example.com</mcvideoURI>
</mcvideo-calling-user-id>
<emergency-ind type="Normal"><mcpttBoolean>true</mcpttBoolean></emergency-ind>
<alert-ind type="Normal"><mcpttBoolean>[true|false]</mcpttBoolean> </alert-ind>
</mcvideo-Params>
</mcvideoinfo>
--[boundary]
...
...

```

## Interoperability Test Description

**Table 71w: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/05 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/05		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call that is upgraded to Emergency or Imminent Peril		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system</li> <li>• Calling user is affiliated to the called group</li> <li>• Group Call properly established</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) calls mcvideo-group-A
	2	check	The initial Group Call is properly established
	3	stimulus	Calling user upgrades the call to an Imminent Peril/Emergency one with a new INVITE with the proper elements in the mcvideo-info
	4	check	reINVITE received at the MCVideo participating server of mcvideo_id_clientA@example.com after traversing SIP core/IMS
	5	check	reINVITE received at the MCVideo controlling server
	6	check	"n" reINVITEs received at mcvideo_clientX
	7	verify	New status of the Group Call agreed

### 7.2.82 MCVideo User initiates the termination of an on-demand prearranged MCVideo Group Call [CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/06]

This test covers the termination by the Calling User of an in-progress prearranged MCVideo Group Call (clauses 9.2.1.2.3.1 and 9.2.1.3.3.1 in ETSI TS 124 281 [7]). It therefore comprises checking the correct termination of the Group Call by the classical BYE procedure in clause 6.2.4.1 in ETSI TS 124 281 [7].

In every BYE the MCVideo Session Identity to leave shall be set as Request-URI.

## Message Sequence Diagram

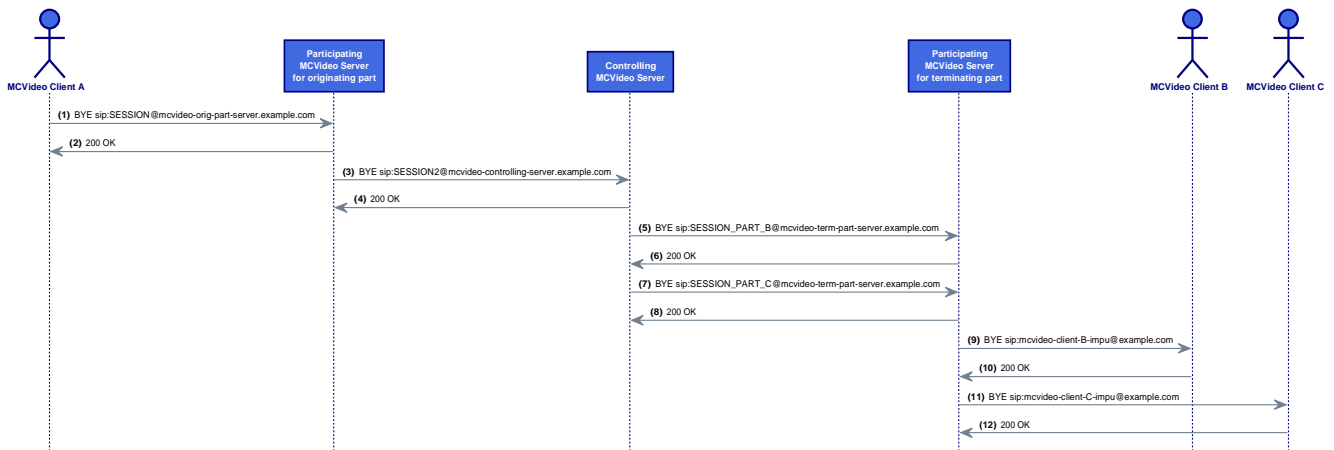


Figure 62x: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/06 Message Sequence

## Message Details

[1] BYE Caller/UE --> MCPVideo Participating

```
BYE sip:SESSION@mcvideo-server-orig-part.example.com SIP/2.0
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcvideo";+g.3gpp.mcvideo Accept-Contact:
*;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcvideo";require;explicit
Accept-Contact:
*;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcvideo";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
P-Preferred-Identity: <sip:mcvideo-clientA@example.com>
CSeq: 2 BYE
Call-ID: XXXX@YYYYYYY
```

[2] 200 OK MCPTT Participating --> Caller/UE

```
BYE 200 OK SIP/2.0
To: <sip:mcvideo-server-orig-part-psi@example.com>;tag=XXXX CSeq: 2 BYE
Call-ID: XXXX@YYYYYYY
```

## Interoperability Test Description

Table 71x: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/06 ITD

Interoperability Test Description	
<b>Identifier</b>	CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/06
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling needed to terminate an ongoing MCVideo Group Call
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>

Interoperability Test Description			
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system</li> <li>• Calling user is affiliated to the called group</li> <li>• Ongoing Group Call</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) initiates a Group Call to mcvideo-group-A
	2	check	The initial Group Call is properly established
	3	stimulus	Calling user triggers the termination of the call by sending a BYE message
	4	check	Group call properly terminated
<b>NOTE:</b> In every BYE the MCPTT Session Identity to leave shall be set as Request-URI.			

### 7.2.83 MCVideo User initiates an on-demand private MCVideo call in manual commencement mode without transmission control [CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WOTC/01]

Equivalent test to that in clause CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WTC/NTC/01 (clause 7.2.54) but with no media-level section for the media floor control entity in the exchanged SDPs.



Message Sequence Diagram

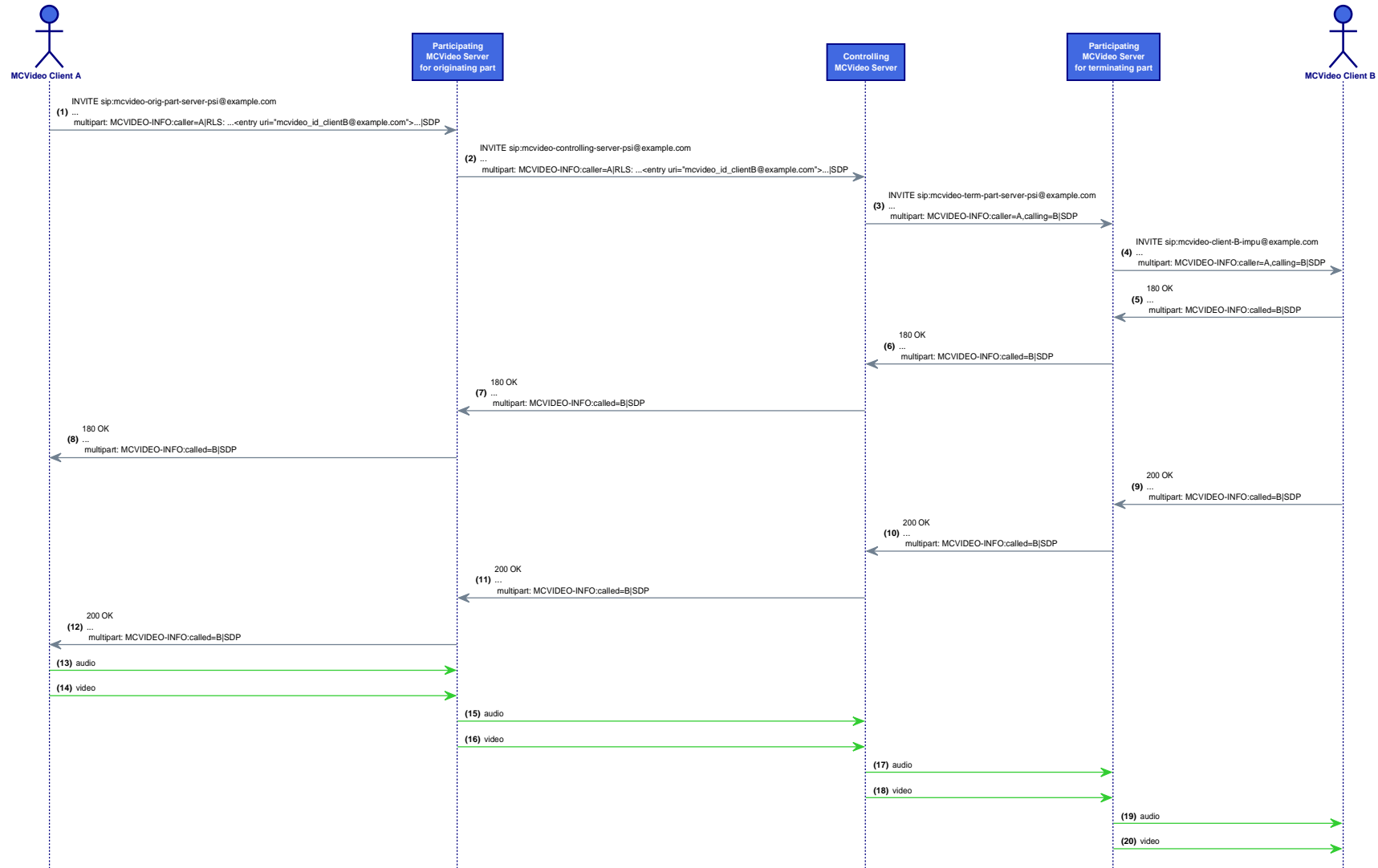


Figure 62y: CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WOTC/01 Message Sequence

## Message Details

Check clause CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WTC/NTC/01 (7.2.54) but with an SDP with no m=application XXXX udp MCVIDEO media transmission control entity.

## Interoperability Test Description

**Table 71y: CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WOTC/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WOTC /01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call without transmission control with manual commencement mode		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system.</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) calls User 2 (mcvideo_id_clientB@example.com)
	2	check	INVITE received at participating server of User 1
	3	check	Participating server adapts the mcvideo-info and creates INVITE to controlling server
	4	check	Controlling server check permissions and forwards INVITE to part. server of callee
	5	check	Upon arrival of the INVITE adapted by the terminating participating function to the terminating Client User 2 is notified
	6	check	Client User 2 accepts the private call and all the signalling is completed
	7	verify	Call connected and multiple media flows exchanged

### 7.2.84 MCVideo User initiates an on-demand private MCVideo call in manual commencement mode with transmission control [CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WTC/NTC/01]

This test covers the Manual commencement mode of the private call. Therefore the INVITE should include an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [31] while in test CONN-MCPTT/ONN\_OTT/PRIV/AUTO/ONDEM/WFC/NFC/01 covered in clause 7.2.15 the value of the header should be "Auto". The resulting procedure is quite equivalent but 180 Ringing packet is now generated and forwarded to the inviting MCPTT user.

Message Sequence Diagram

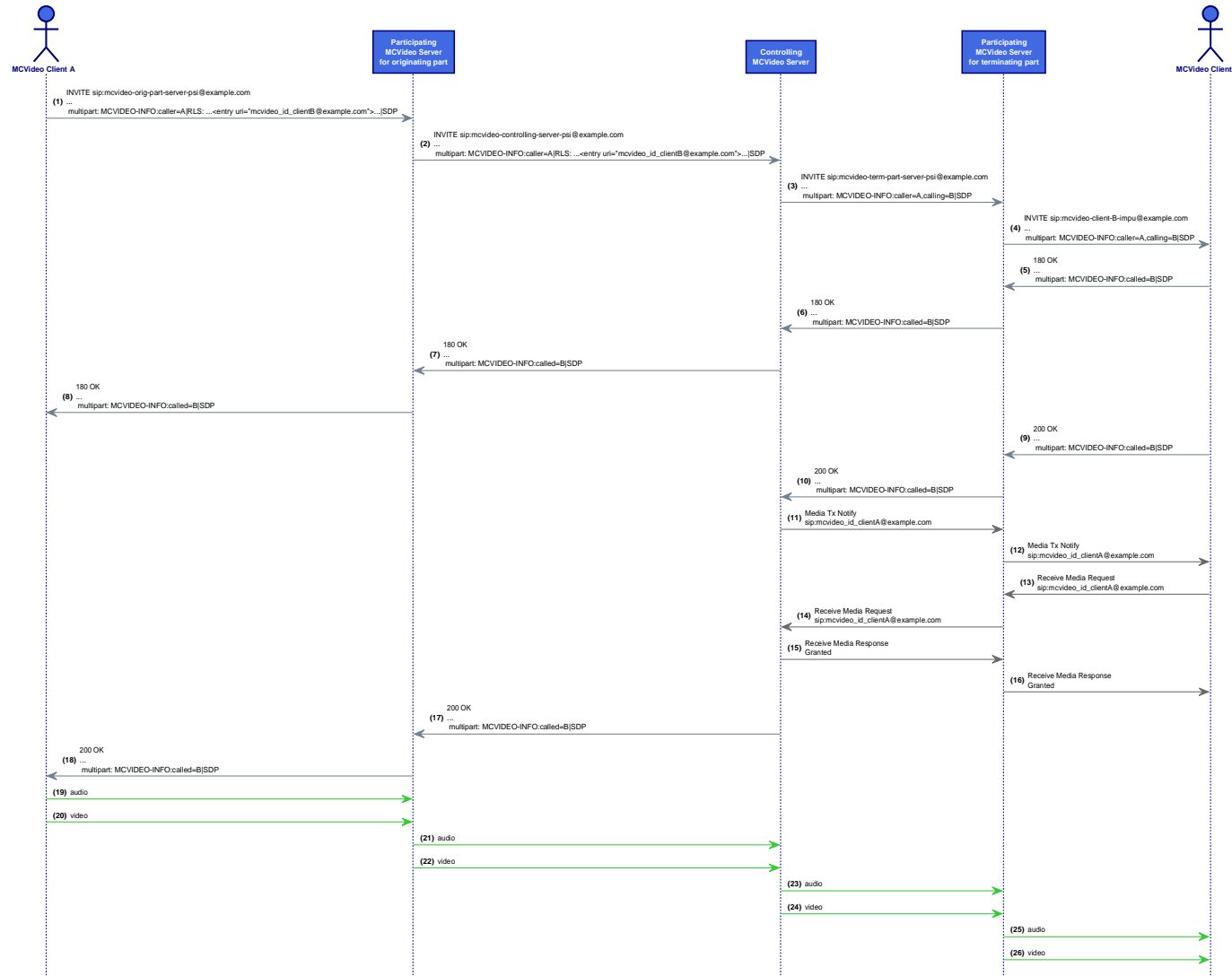


Figure 62z: CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WTC/NTC/01 Message Sequence

## Message Details

The initial INVITE would be equivalent to that in clause 7.2.15 but with the header: Answer-Mode: Manual.

## Interoperability Test Description

**Table 71z: CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WTC/NTC/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WTC/NTC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with manual commencement mode		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) calls User 2 (mcvideo_id_clientB@example.com)
	2	check	INVITE received at participating server of User 1
	3	check	Participating server adapts the mcvideo-info and creates INVITE to controlling server
	4	check	Controlling server forwards INVITE to part. server of callee
	5	check	Upon arrival of the INVITE adapted by the terminating participating function to the terminating Client User 2 is notified
	6	check	Client User 2 accepts the private call and all the signalling is completed
	7	verify	Call connected and multiple media flows exchanged

## 7.2.85 MCVideo User setups locally an on-demand ambient viewing call [CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/01]

The procedures for ambient viewing calls. are applicable to both locally initiated and remotely initiated ambient viewing call. In this test case an authorized MCVideo user initiates an ambient viewing call in order to view the terminating user. The associated procedures are described in clause 15.2.1.1 in ETSI TS 124 281 [7]. Being a locally initiated ambient viewing call, it shall comply with the conditions for implicit transmission control as specified in clause 6.4 in ETSI TS 124 281 [7]. Participating server will follow procedures in clause 15.3 in ETSI TS 124 281 [7], while Controlling clause 15.4 in ETSI TS 124 281 [7].

Message Sequence Diagram

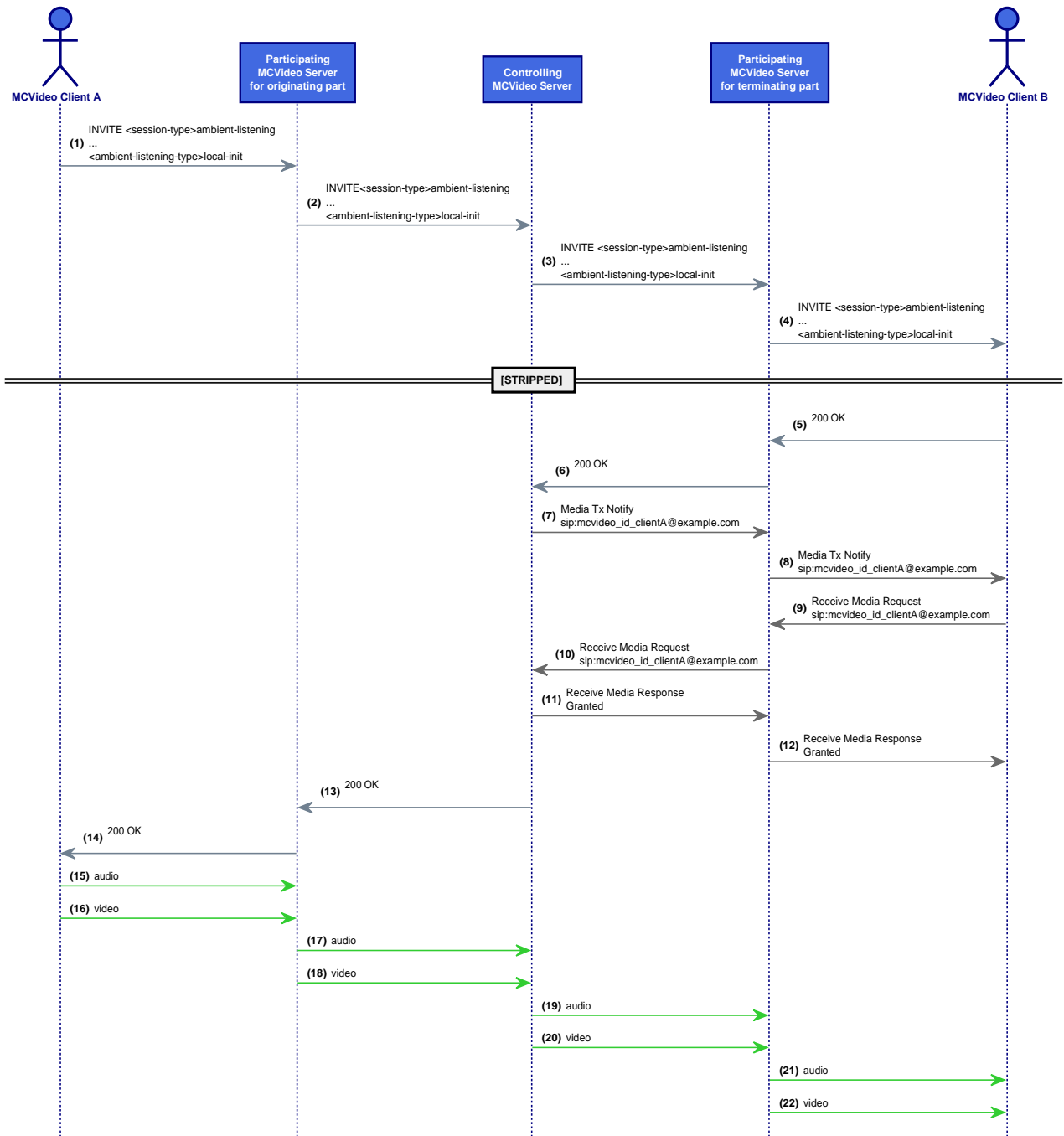


Figure 62aa: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/01 Message Sequence

Message Details

Trace pending

## Interoperability Test Description

Table 71aa: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a locally initiated Ambient Viewing Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system and users properly affiliated to the called chat group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) initiates locally an ambient viewing call towards User 2
	2	check	Dialog creating INVITE received at the MCVideo participating server of User 1
	3	check	The participating server adapts the mcvideo-info accordingly and creates an INVITE to the controlling server
	4	check	The controlling server check permissions and forward the INVITE to the participating server of the callee
	5	check	Upon arrival of the INVITE adapted by the terminating participating function to the terminating Client User 2 is notified
	6	verify	Call connected and ambient viewing activated

## 7.2.86 MCVideo User releases remotely an on-demand ambient viewing call [CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/02]

In this test case an authorized MCVideo user releases an ongoing ambient viewing call. The associated procedures are described in clause 15.2.1.3 in ETSI TS 124 281 [7].

## Message Sequence Diagram

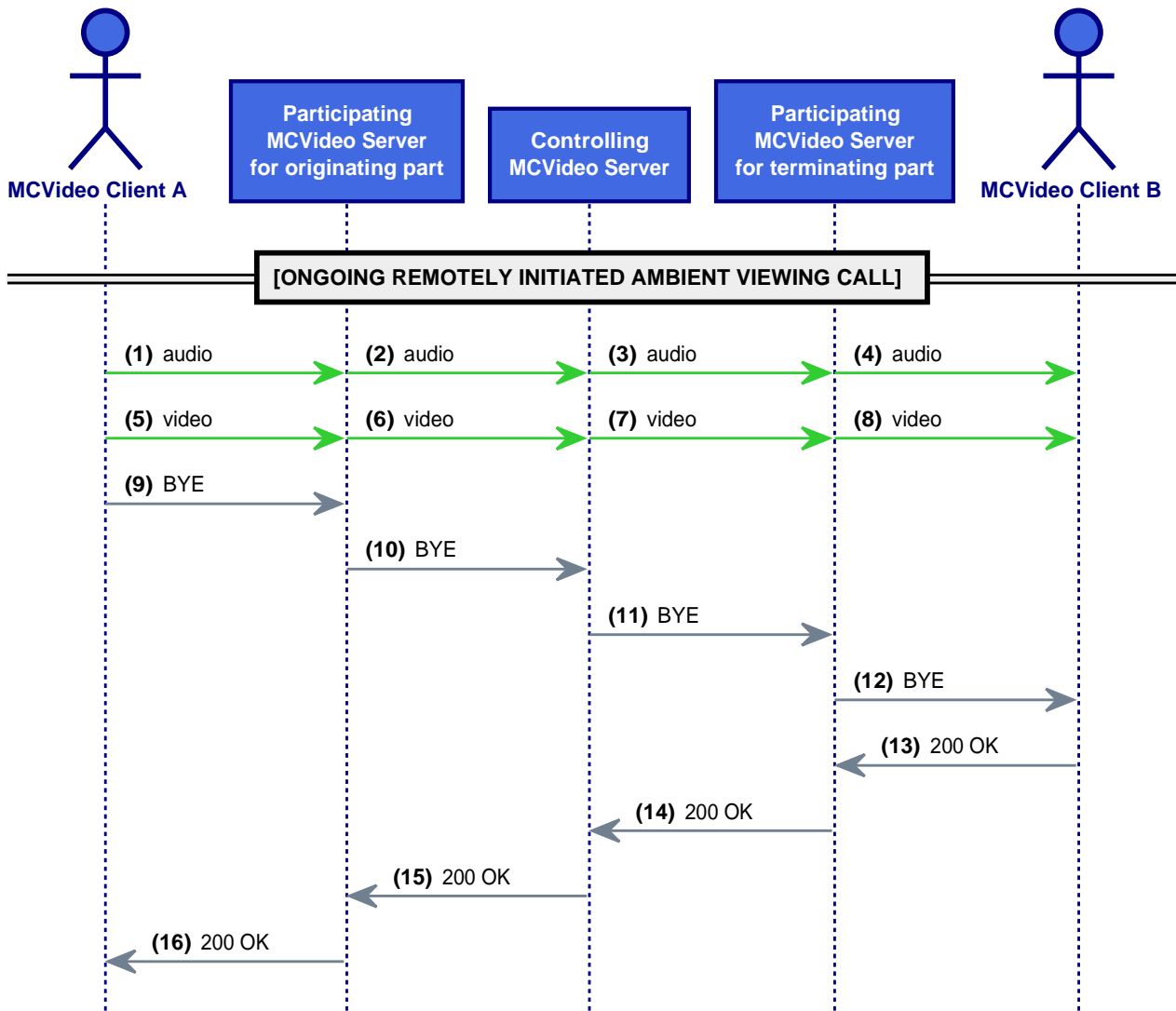


Figure 62ab: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/02 Message Sequence

Message Details

Trace pending

## Interoperability Test Description

Table 71ab: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/02 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a locally released Ambient Viewing Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system and users properly affiliated to the called chat group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	check	Ongoing remotely initiated ambient viewing call
	2	stimulus	User 1 (mcvideo_id_clientA@example.com) releases the ambient viewing call
	3	check	BYE sent to the MCVideo participating server of User 1
	4	check	Upon arrival of the BYE User 2 is notified (viewed MCVideo user) and 200 OK generated back
	5	verify	Call disconnected, all cache removed and ambient viewing deactivated

## 7.2.87 MCVideo User setups remotely an on-demand ambient viewing call [CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/01]

The procedures for ambient viewing calls are applicable to both locally initiated and remotely initiated ambient viewing call. In this test case an authorized MCVideo user initiates an ambient viewing call in order to view the terminating user. The associated procedures are described in clause 15.2.1.1 in ETSI TS 124 281 [7]. Being a locally initiated ambient viewing call, it shall comply with the conditions for implicit floor control as specified in clause 6.4 in ETSI TS 124 281 [7]. Participating server will follow procedures in clause 15.3 in ETSI TS 124 281 [7], while Controlling clause 15.4 in ETSI TS 124 281 [7].

**NOTE:** The procedure is the same as in clause 7.2.30 but with <ambient-listening-type> element set to a value of remote-init.



Message Sequence Diagram

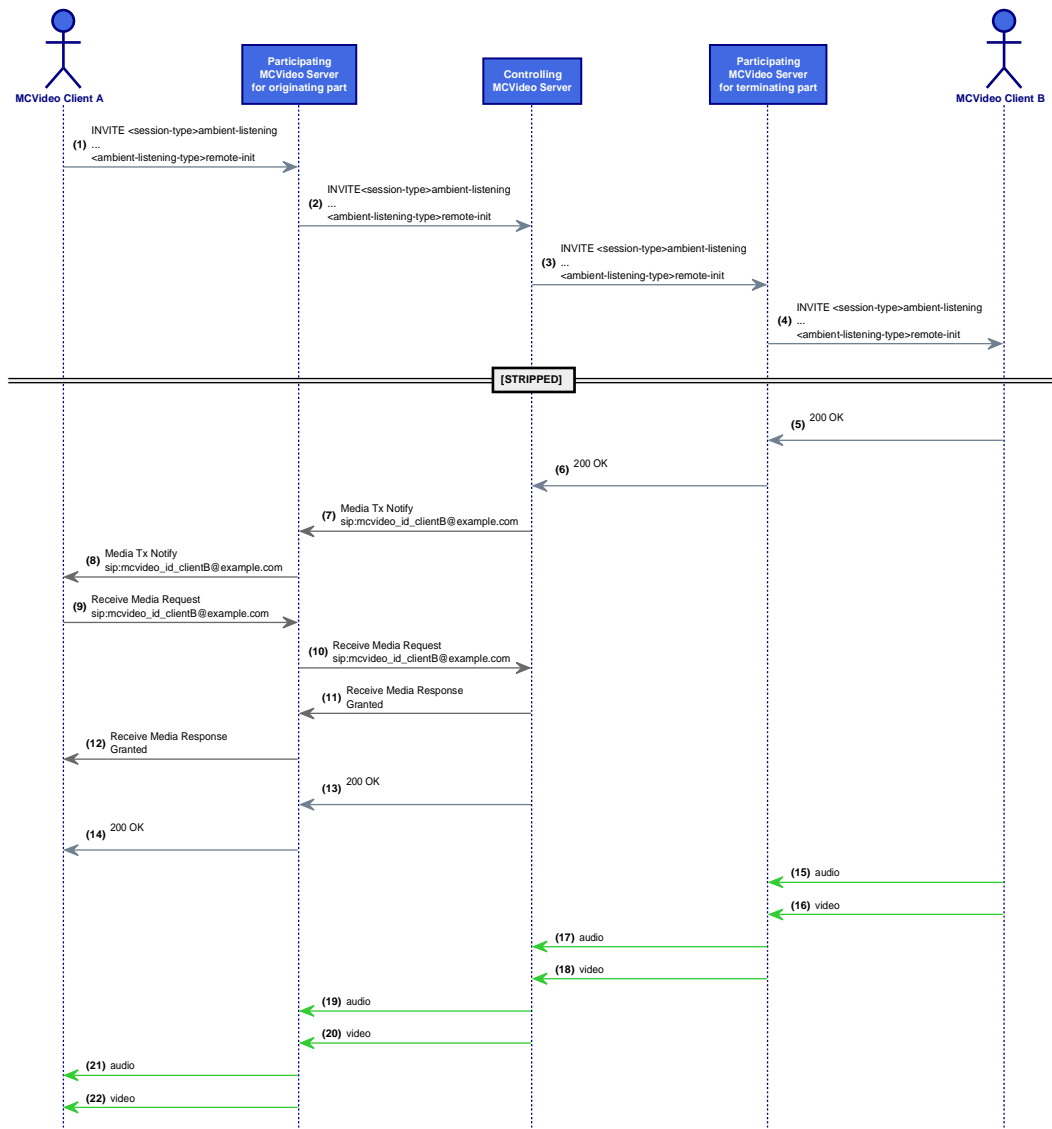


Figure 62ac: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/01 Message Sequence

Message Details

Trace pending

## Interoperability Test Description

Table 71ac: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a remotely initiated Ambient Viewing Call		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system and users properly affiliated to the called chat group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) initiates remotely an ambient viewing call towards User 2
	2	check	Dialog creating INVITE received at the MCVideo participating server of User 1
	3	check	The participating server adapts the mcvideo-info accordingly and creates an INVITE to the controlling server
	4	check	The controlling server check permissions and forward the INVITE to the participating server of the callee
	5	check	Upon arrival of the INVITE adapted by the terminating participating function to the terminating Client User 2 is NOT notified and the signalling is completed
	6	verify	Call connected and ambient viewing activated

## 7.2.88 MCVideo User releases remotely an on-demand ambient viewing call [CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/02]

In this test case an authorized MCVideo user releases an ongoing ambient viewing call. The associated procedures are described in clause 15.2.1.3 in ETSI TS 124 281 [7].

Message Sequence Diagram

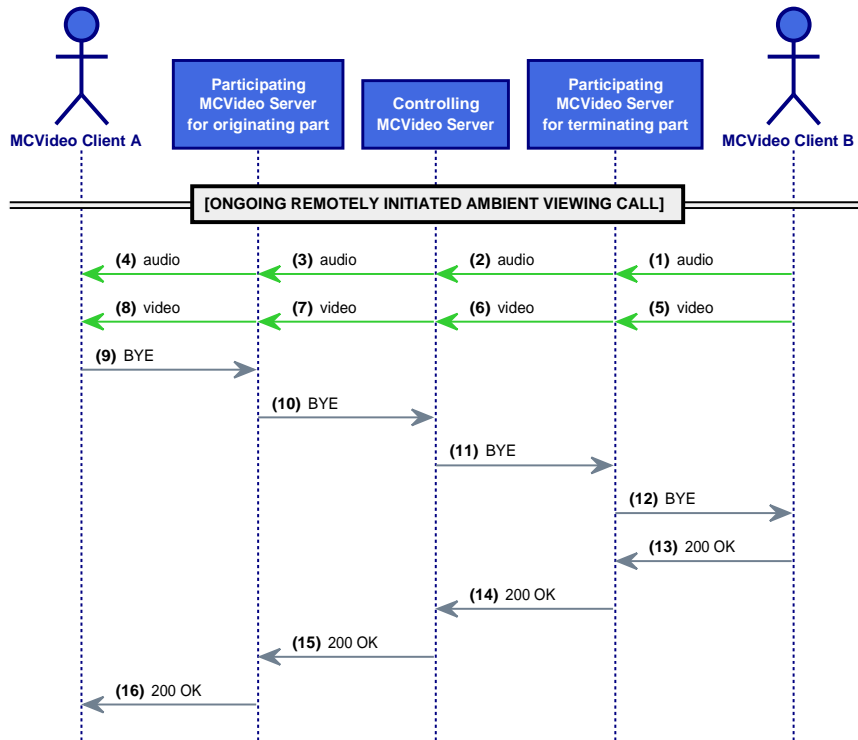


Figure 62ad: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/02 Message Sequence

Message Details

Trace pending

Interoperability Test Description

Table 71ad: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/02 ITD

Interoperability Test Description	
<b>Identifier</b>	CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/02
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a remotely released Ambient Viewing Call
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS and MC system and users properly affiliated to the called chat group</li> </ul>

Interoperability Test Description			
Test Sequence	Step	Type	Description
	1	check	Ongoing remotely initiated ambient viewing call
	2	stimulus	User 1 (mcvideo_id_clientA@example.com) releases the ambient viewing call
	3	check	BYE sent to the MCVideo participating server of User 1
	4	check	Upon arrival of the BYE User 2 is NOT notified (viewed MCVideo user) and 200 OK generated back
	5	verify	Call disconnected, all cache removed and ambient viewing deactivated

### 7.2.89 MCVideo User initiates a one-to-one video pull in automatic commencement mode with transmission control [CONN-MCVIDEO/ONN/ONE-TO-ONE/VIDEOPULL/01]

In this test case an authorized MCVideo user initiates a video pull request to pull a video from another MCVideo client. The associated procedures are described in clause 12.2.2.1 in ETSI TS 124 281 [7]. 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, including 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". Participating server will follow procedures in clause 12.2.3.1.1 in ETSI TS 124 281 [7], while Controlling clause 12.2.3.2.2 in ETSI TS 124 281 [7].

Message Sequence Diagram

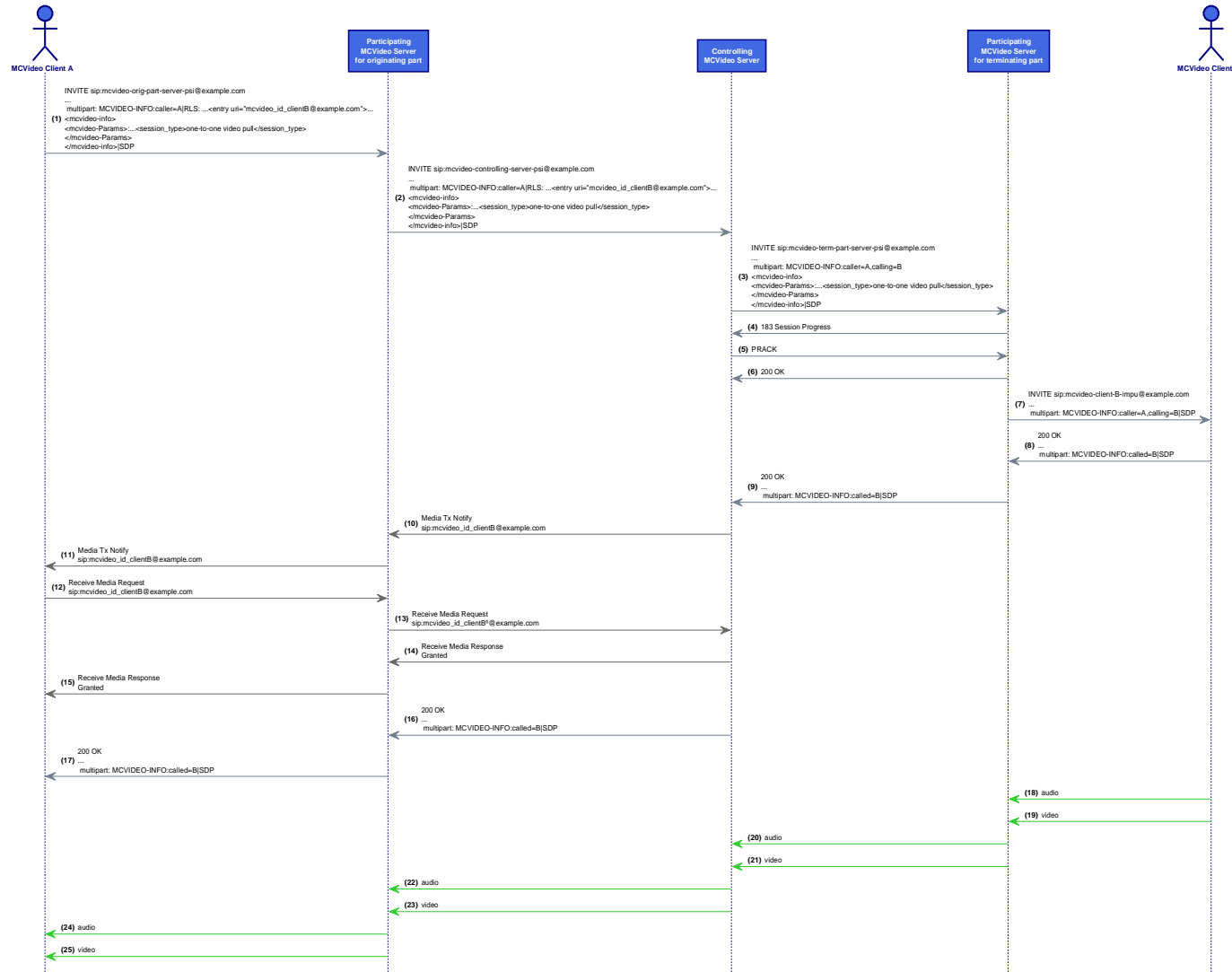


Figure 62ae : CONN-MCVIDEO/ONN/ONE-TO-ONE/VIDEOPULL/01 Message Sequence

## Message Details

```

[1] INVITE MCVideo Caller/UE --> MCVideo Participating
INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0 Via: SIP/2.0/UDP IP:PORT;branch=BRANCH
From: <sip:mcvideo-client-A-impu@example.com>;tag=TAG
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:mcvideo-client-A-impu@IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcvideo";+g.3gpp.mcvideo ...
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3
A3gpp-service.ims.icsi.mcvideo";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
[Privacy: id]
P-Preferred-Identity: <sip:mcvideo-client-A-impu@example.com>
Answer-Mode: Auto
Content-Type: multipart/mixed; boundary=[boundary]
--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
<mcvideo-Params>
<session-type>one-to-one video pull </session-type>
</mcvideo-Params>
</mcvideoinfo>
--[boundary]
Content-Type: application/resource-lists+xml
<?xml version="1.0" encoding="UTF-8"?>
<resource-lists xmlns="urn:ietf:params:xml:ns:resource-lists" xmlns:cc="
urn:ietf:params:xml:ns:copycontrol">
<list>
<entry uri="mcvideo_id_clientB@example.com" cc:copyControl="to"/> </list>
</resource-lists>
--[boundary]
Content-Type: application/sdp Content-Type: application/sdp
v=0
o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP
t=0 0
m=audio AUDIO_PORT RTP/AVP 105
i=audio component of MCVideo
a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20
a=maxptime:240
m=video VIDEO_PORT RTP/AVP 97
i=video component of MCVideo
a=rtpmap:97 H264/90000
a=fmtp:97 profile-level-id=640c1f;max-fps=3000 a=sendrecv a=direction:both
m=application TC_PORT udp MCVideo a=fmtp:MCVideo mc_queueing;mc_priority=5;
...
--[boundary]--

```

## Interoperability Test Description

Table 71ae: CONN-MCVIDEO/ONN/ONE-TO-ONE/VIDEOPULL/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/ONE-TO-ONE/VIDEOPULL/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a one-to-one video pull		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) triggers its MCVideo client to pull video from User 2 (mcvideo_id_clientB@example.com)
	2	check	INVITE received at participating server of User 1
	3	check	Participating server adapts the mcvideo-info and creates INVITE to controlling server
	4	check	Controlling server forwards INVITE to part. server of callee
	5	check	Upon arrival of the INVITE at User 2 the pull is automatically taken
	6	check	Media Tx Notify received at terminating participating server
	7	check	Media Tx Notify received at mcvideo_id_clientB
	8	check	Receiver accepts media with a Receive Media Request
	9	check	Receive Media Request received at participating server
	10	check	Receive Media Request received at controlling server
	11	check	Controlling server sends Receive Media Response with Granted result
	12	check	Receive Media Response received at participating server
	13	check	Receive Media Response received at mcvideo_id_clientB
	14	verify	Video pull connected. User 1 receives video from User 2

### 7.2.90 MCVideo User initiates a one-from-server video pull in automatic commencement mode with transmission control [CONN-MCVIDEO/ONN/ONE-FROM-SERVER/VIDEOPULL/01]

In this test case an authorized MCVideo user initiates a video pull request to pull a video from a MCVideo Server. The associated procedures are described in clause 12.2.2.4 in ETSI TS 124 281 [7]. In order to pull a video from a MCVideo server, MCVideo client shall perform the procedures of the clause 10.2.2.2.1, including 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", 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 and shall use the automatic commencement mode. Participating server will follow procedures in clause 12.2.3.1.4 in ETSI TS 124 281 [7], while Controlling clause 12.2.3.2.5 in ETSI TS 124 281 [7].

Message Sequence Diagram

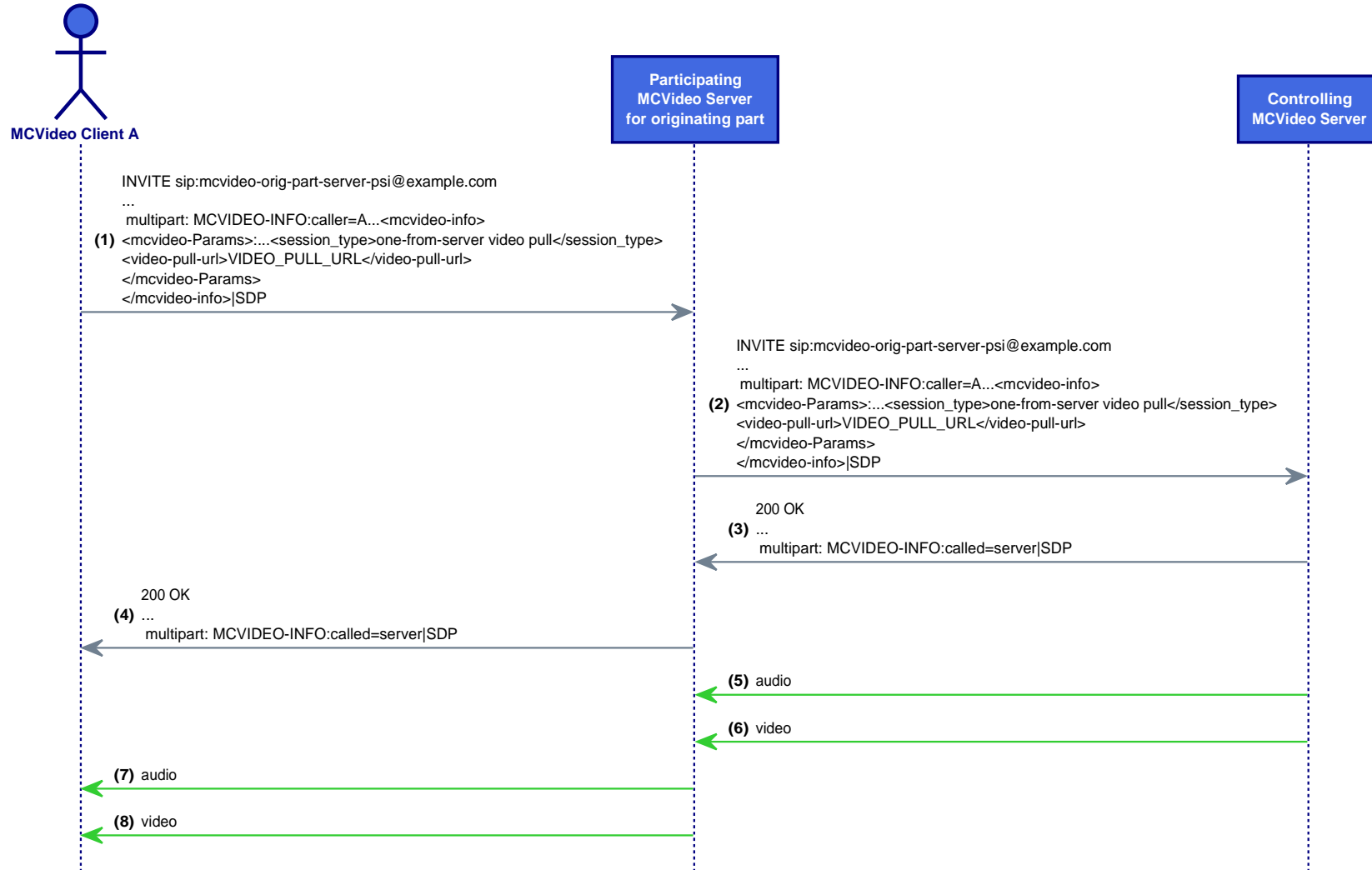


Figure 62af: CONN-MCVIDEO/ONN/ONE-FROM-SERVER/VIDEOPULL/01 Message Sequence



## Message Details

```

[1] INVITE MCVideo Caller/UE --> MCVideo Participating
INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0 Via: SIP/2.0/UDP IP:PORT;branch=BRANCH
From: <sip:mcvideo-client-A-impu@example.com>;tag=TAG
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:mcvideo-client-A-impu@IP:PORT>;+g.3gpp.icsi-ref="urn:3Aurn-7%3 A3gpp-
service.ims.icsi.mcvideo";+g.3gpp.mcvideo ...
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn:3Aurn-7%3
A3gpp-service.ims.icsi.mcvideo";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
[Privacy: id]
P-Preferred-Identity: <sip:mcvideo-client-A-impu@example.com>
Answer-Mode: Auto
Content-Type: multipart/mixed; boundary=[boundary]
--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
<mcvideo-Params>
<session-type>one-to-one video pull </session-type>
<video-pull-url>VIDEO_PULL_URL</video-pull-url>
</mcvideo-Params>
</mcvideoinfo>
--[boundary]
Content-Type: application/resource-lists+xml
<?xml version="1.0" encoding="UTF-8"?>
<resource-lists xmlns="urn:ietf:params:xml:ns:resource-lists" xmlns:cc="
urn:ietf:params:xml:ns:copycontrol">
<list>
<entry uri="mcvideo_id_clientB@example.com" cc:copyControl="to"/> </list>
</resource-lists>
--[boundary]
Content-Type: application/sdp Content-Type: application/sdp
v=0
o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP
t=0 0
m=audio AUDIO_PORT RTP/AVP 105
i=audio component of MCVideo
a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20
a=maxptime:240
m=video VIDEO_PORT RTP/AVP 97
i=video component of MCVideo
a=rtpmap:97 H264/90000
a=fmtp:97 profile-level-id=640c1f;max-fps=3000 a=sendrecv a=direction:both
m=application TC_PORT udp MCVideo a=fmtp:MCVideo mc_queueing;mc_priority=5;
...
--[boundary]--

```

## Interoperability Test Description

Table 71af: CONN-MCVIDEO/ONN/ONE-FROM-SERVER/VIDEOPULL/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/ONE-FROM-SERVER/VIDEOPULL/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a one-from-server video pull		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) triggers its MCVideo client to pull video from MCVideo server
	2	check	INVITE received at participating server of User 1
	3	check	Participating server adapts the mcvideo-info and creates INVITE to controlling server
	4	check	Controlling server forwards checks permissions and automatically sends the requested video
	5	verify	Video pull connected. User 1 receives video from server

### 7.2.91 MCVideo User initiates a one-to-one video push in automatic commencement mode with transmission control [CONN-MCVIDEO/ONN/ONE-TO-ONE/VIDEOPUSH/01]

In this test case an authorized MCVideo user initiates a video push request to push a video to another MCVideo client. The associated procedures are described in clause 13.2.2.1 in ETSI TS 124 281 [7]. In order to push a video to another MCVideo client, the MCVideo client shall perform the procedures of clause 10.2.2.2.1, including 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 interact with the media plane as specified in 3GPP TS 24.581 [15] clause 6.2. Participating server will follow procedures in clause 13.2.3.1.1 in ETSI TS 124 281 [7], while Controlling clause 13.2.3.2.2 in ETSI TS 124 281 [7].

Message Sequence Diagram

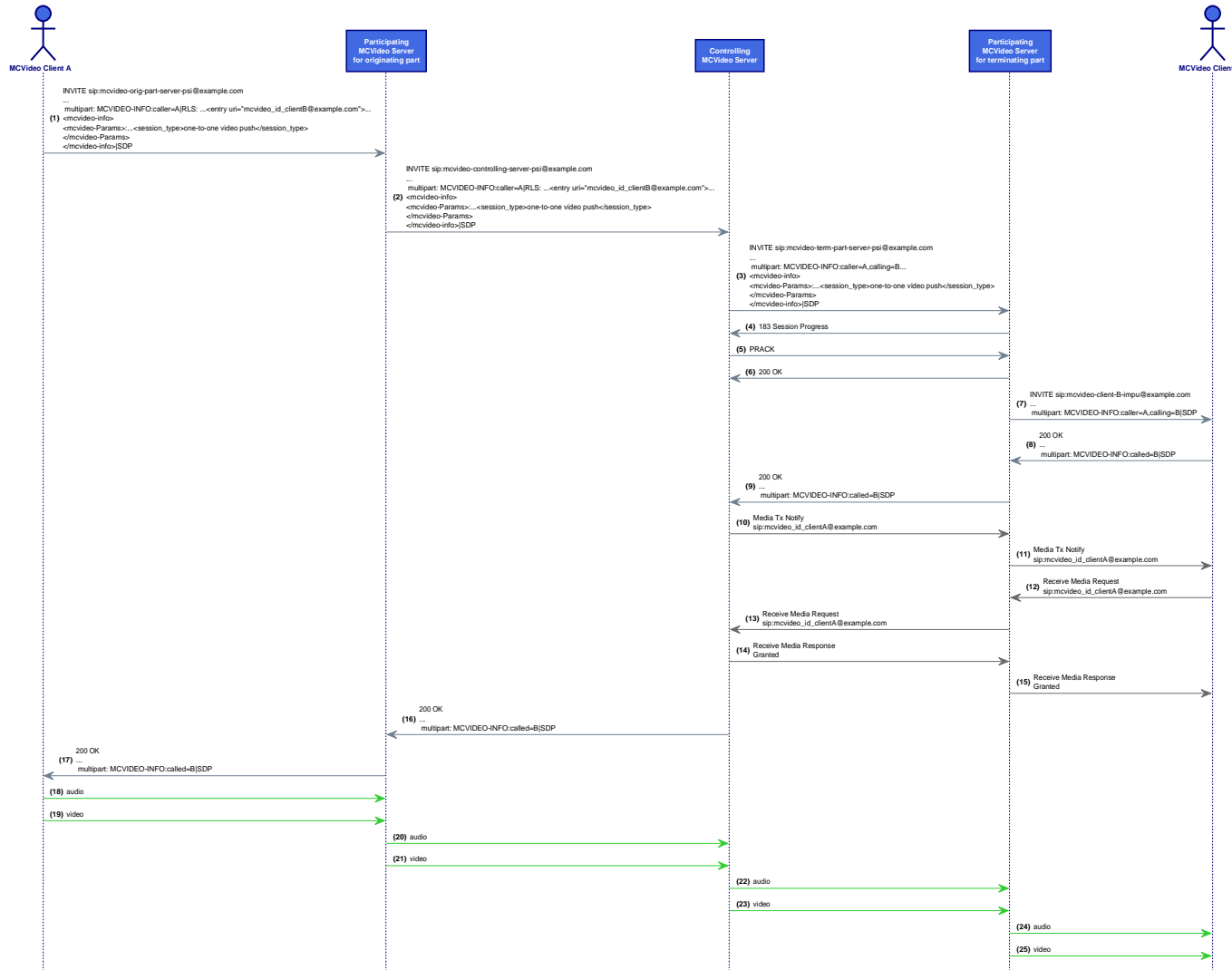


Figure 62ag: CONN-MCVIDEO/ONN/ONE-TO-ONE/VIDEOPUSH/01 Message Sequence

## Message Details

```
[1] INVITE MCVideo Caller/UE --> MCVideo Participating
INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0 Via: SIP/2.0/UDP IP:PORT;branch=BRANCH
From: <sip:mcvideo-client-A-impu@example.com>;tag=TAG
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:mcvideo-client-A-impu@IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcvideo";+g.3gpp.mcvideo ...
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3
A3gpp-service.ims.icsi.mcvideo";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
[Privacy: id]
P-Preferred-Identity: <sip:mcvideo-client-A-impu@example.com>
Answer-Mode: Auto
Content-Type: multipart/mixed; boundary=[boundary]
--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
<mcvideo-Params>
<session-type>one-to-one video push </session-type>
</mcvideo-Params>
</mcvideoinfo>
--[boundary]
Content-Type: application/resource-lists+xml
<?xml version="1.0" encoding="UTF-8"?>
<resource-lists xmlns="urn:ietf:params:xml:ns:resource-lists" xmlns:cc="
urn:ietf:params:xml:ns:copycontrol">
<list>
<entry uri="mcvideo_id_clientB@example.com" cc:copyControl="to"/> </list>
</resource-lists>
--[boundary]
Content-Type: application/sdp Content-Type: application/sdp
v=0
o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP
t=0 0
m=audio AUDIO_PORT RTP/AVP 105
i=audio component of MCVideo
a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20
a=maxptime:240
m=video VIDEO_PORT RTP/AVP 97
i=video component of MCVideo
a=rtpmap:97 H264/90000
a=fmtp:97 profile-level-id=640c1f;max-fps=3000 a=sendrecv a=direction:both
m=application TC_PORT udp MCVideo a=fmtp:MCVideo
mc_queueing;mc_priority=5;mc_granted;mc_implicit_request ...
--[boundary]--
```

## Interoperability Test Description

Table 71ag: CONN-MCVIDEO/ONN/ONE-TO-ONE/VIDEOPUSH/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/ONE-TO-ONE/VIDEOPUSH/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a one-to-one video push		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) triggers its MCVideo client to push video from User 2 (mcvideo_id_clientB@example.com)
	2	check	INVITE received at participating server of User 1
	3	check	Participating server adapts the mcvideo-info and creates INVITE to controlling server
	4	check	Controlling server forwards INVITE to part. server of callee
	5	check	Upon arrival of the INVITE at User 2 the pull is automatically taken
	6	check	Media Tx Notify received at terminating participating server
	7	check	Media Tx Notify received at mcvideo_id_clientB
	8	check	Receiver accepts media with a Receive Media Request
	9	check	Receive Media Request received at participating server
	10	check	Receive Media Request received at controlling server
	11	check	Controlling server sends Receive Media Response with Granted result
	12	check	Receive Media Response received at participating server
	13	check	Receive Media Response received at mcvideo_id_clientB
	14	verify	Video pull connected. User 1 sends video to User 2

## 7.2.92 MCVideo User initiates a one-to-server video push in automatic commencement mode with transmission control [CONN-MCVIDEO/ONN/ONE-TO-SERVER/VIDEOPUSH/01]

In this test case an authorized MCVideo user initiates a video push request to push a video to a MCVideo Server. The associated procedures are described in clause 13.2.2.4 in ETSI TS 124 281 [7]. In order to push a video to a MCVideo server, the MCVideo client shall perform the procedures of clause 10.2.2.2.1, including 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" and shall use the automatic commencement mode. Upon receiving a request for a one-to-server video push call with one <video-push-url> element set in the application/vnd.3gpp.mcvideo-info+xmlMIMEbody, the MCVideo client shall store the received <video-push-url> element. Participating server will follow procedures in clause 13.2.3.1.4 in ETSI TS 124 281 [7], while Controlling clause 13.2.3.2.5 in ETSI TS 124 281 [7].

Message Sequence Diagram

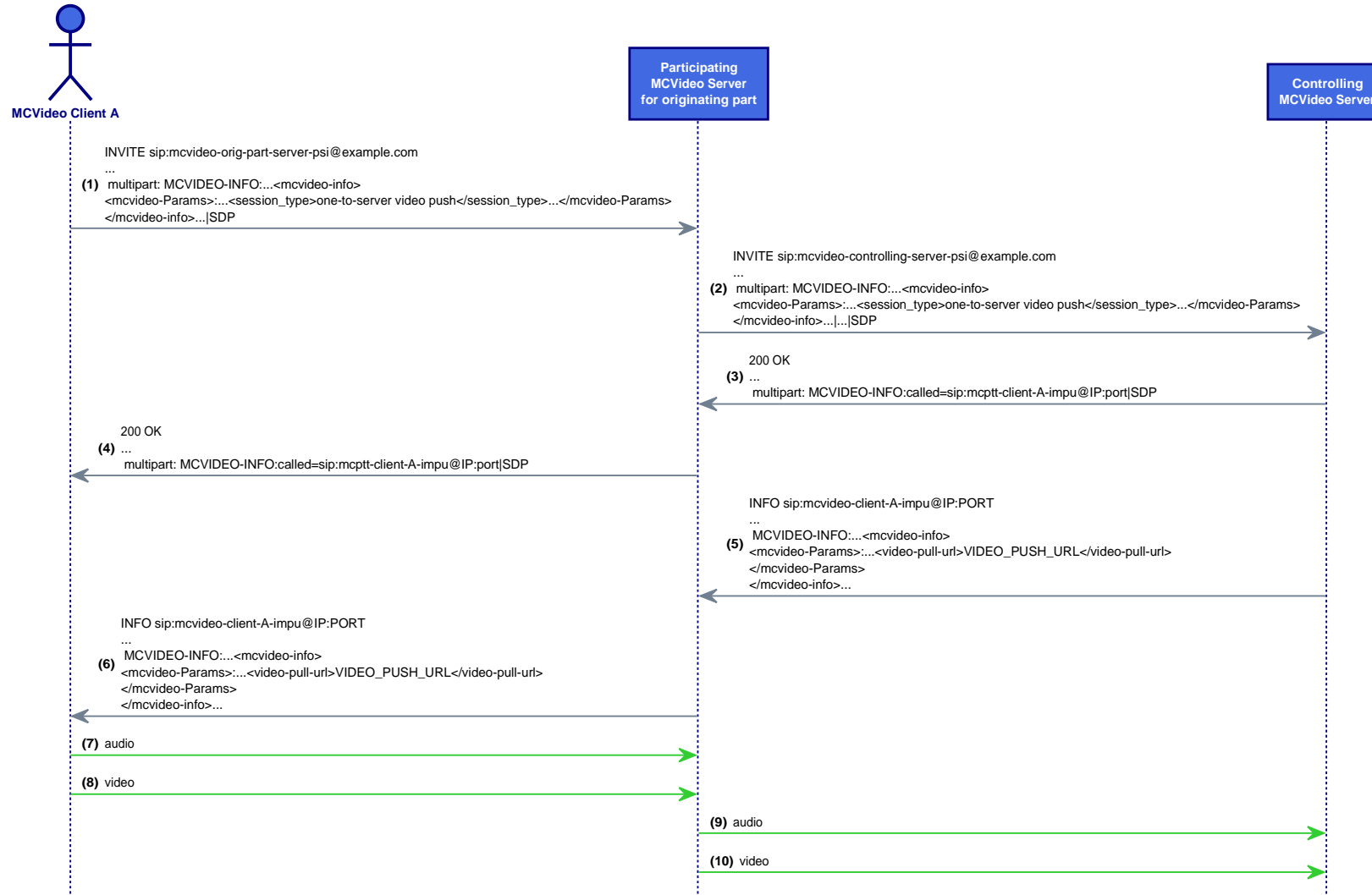


Figure 62ah: CONN-MCVIDEO/ONN/ONE-TO-SERVER/VIDEOPUSH/01 Message Sequence

## Message Details

```
[1] INVITE MCVideo Caller/UE --> MCVideo Participating
INVITE sip:mcvideo-server-orig-part-psi@example.com SIP/2.0 Via: SIP/2.0/UDP IP:PORT;branch=BRANCH
From: <sip:mcvideo-client-A-impu@example.com>;tag=TAG
To: <sip:mcvideo-server-orig-part-psi@example.com>
Contact: <sip:mcvideo-client-A-impu@IP:PORT>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcvideo";+g.3gpp.mcvideo ...
Accept-Contact: *;+g.3gpp.mcvideo;require;explicit
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3
A3gpp-service.ims.icsi.mcvideo";require;explicit
P-Preferred-Service: urn:urn-7:3gpp-service.ims.icsi.mcvideo
[Privacy: id]
P-Preferred-Identity: <sip:mcvideo-client-A-impu@example.com>
Answer-Mode: Auto
Content-Type: multipart/mixed; boundary=[boundary]
--[boundary]
Content-Type: application/vnd.3gpp.mcvideo-info+xml
<?xml version="1.0" encoding="UTF-8"?>
<mcvideoinfo xmlns="urn:3gpp:ns:mcvideoInfo:1.0" xmlns:xsi=" http://www.w3.org/2001/XMLSchema-
instance">
<mcvideo-Params>
<session-type>one-to-one video push </session-type>
<video-push-url>VIDEO_PUSH_URL</video-push-url>
</mcvideo-Params>
</mcvideoinfo>
--[boundary]
Content-Type: application/resource-lists+xml
<?xml version="1.0" encoding="UTF-8"?>
<resource-lists xmlns="urn:ietf:params:xml:ns:resource-lists" xmlns:cc="
urn:ietf:params:xml:ns:copycontrol">
<list>
<entry uri="mcvideo_id_clientB@example.com" cc:copyControl="to"/> </list>
</resource-lists>
--[boundary]
Content-Type: application/sdp Content-Type: application/sdp
v=0
o=MCVIDEOCLIENT 1183811731 4248272445 IN IP4 IP
s=-
c=IN IP4 IP
t=0 0
m=audio AUDIO_PORT RTP/AVP 105
i=audio component of MCVideo
a=rtpmap:105 AMR-WB/16000/1
a=fmtp:105 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
a=ptime:20
a=maxptime:240
m=video VIDEO_PORT RTP/AVP 97
i=video component of MCVideo
a=rtpmap:97 H264/90000
a=fmtp:97 profile-level-id=640c1f;max-fps=3000 a=sendrecv a=direction:both
m=application TC_PORT udp MCVideo a=fmtp:MCVideo
mc_queueing/mc_priority=5/mc_granted/mc_implicit_request ...
--[boundary]--
```

## Interoperability Test Description

Table 71ah: CONN-MCVIDEO/ONN/ONE-TO-SERVER/VIDEOPUSH/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/ONE-TO-SERVER/VIDEOPUSH/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a one-from-server video pull		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) triggers its MCVideo client to push video from MCVideo server
	2	check	INVITE received at participating server of User 1
	3	check	Participating server adapts the mcvideo-info and creates INVITE to controlling server
	4	check	Controlling server checks permissions, sends SIP OK to the inviting user and also SIP INFO with the url where the video will be stored.
	5	verify	Video push connected. User 1 sends video to server, where it is stored.

### 7.2.93 MCVideo User initiates an emergency alert by sending a SIP MESSAGE [CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/01]

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 ETSI TS 124 281 [7]. The other mechanism utilizes SIP MESSAGE requests and is documented in clause 11 of the same TS.

Since the optional submission of the alert indicator was already considered in the emergency calling procedures, the focus of the following 4 test cases is in MCVideo emergency alerts initiated or cancelled using SIP MESSAGE as described in the procedures of clause 11 in ETSI TS 124 281 [7] including MCVideo emergency alert initiation and MCVideo emergency alert cancellation (with optional cancelling of the in-progress emergency state of a group) and location.

In this first emergency alert test case, the initiation of an authorized (as determined by clause 6.2.8.1.6) emergency alert to the indicated MCVideo group upon receiving a request from the MCVideo shall generate, according to clause 12.2.1.1) a SIP MESSAGE request in accordance with ETSI TS 124 229 [6] and IETF RFC 3428 [42] that includes an application/vnd.3gpp.mcptt-info+xml MIME with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <mcvideo-request-uri> element set to the group identity, the <alert-ind> element set to a value of "true", the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideoT client and the specific location information for MCVideo emergency alert as specified in clause 6.2.9.1 of ETSI TS 124 281 [7].



The originating participating (clause 11.2.2.1), upon checking the identity and authorization of the MCVideo user, will forward the message to the controlling (clause 11.2.3.1) will generate an outgoing SIP MESSAGE request notification of the MCPTT user's emergency alert indication as specified in clause 6.3.3.1.11 with the clarifications of clause 6.3.3.1.12 for each of the other affiliated members of the group and will later indicate successful receipt of an emergency alert by generating a SIP MESSAGE request as described in clause 6.3.3.1.20 with the <alert-ind> element set to a value of "true", the <alert-ind-rcvd> element set to a value of true; and the <mcptt-client-id> element with the MCVideo client ID that was included in the incoming SIP MESSAGE request.

Message Sequence Diagram

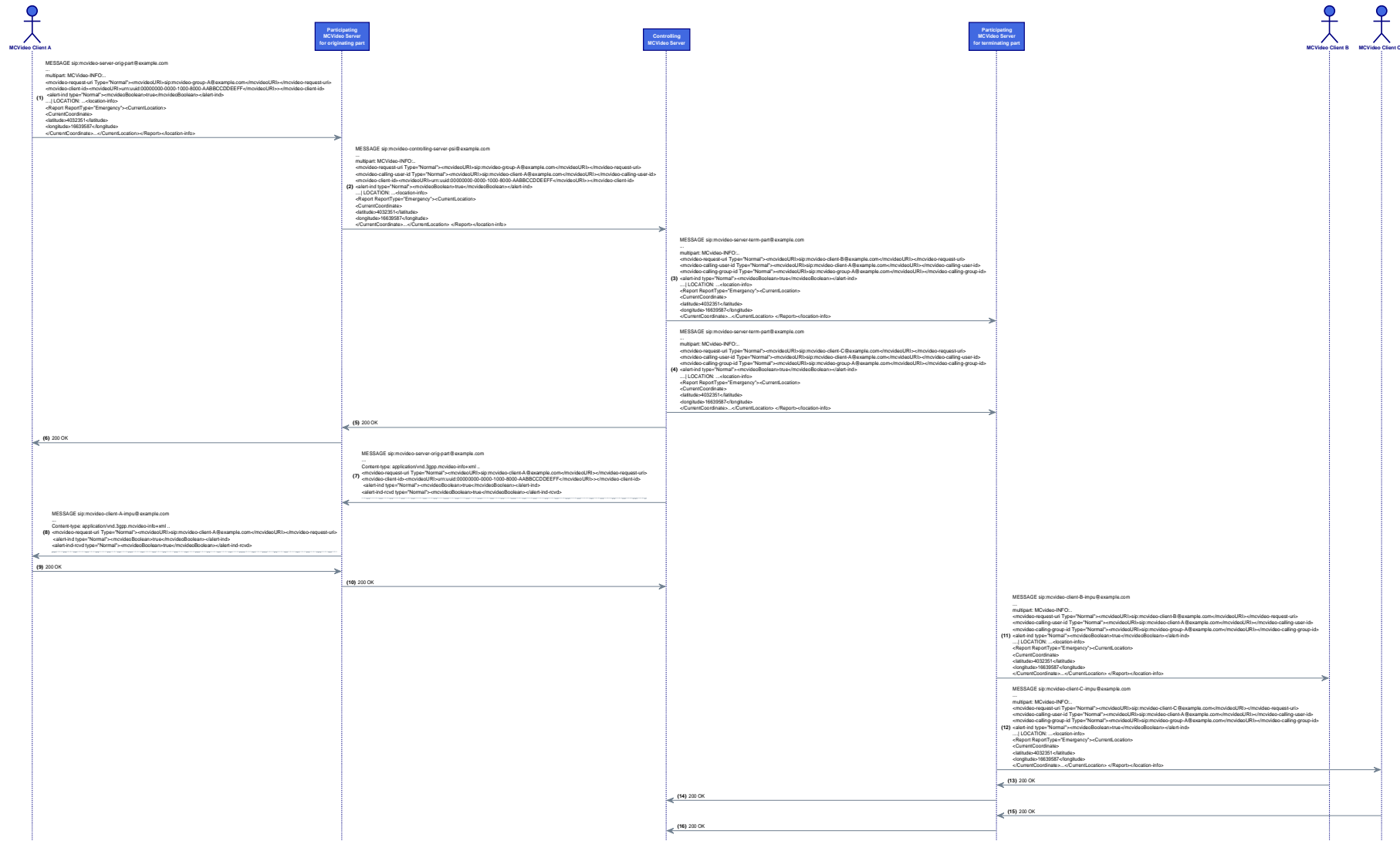


Figure 62ai: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 71ai: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for a Group Call that is upgraded to Emergency.		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system and users properly affiliated to the called chat group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) triggers an emergency alert to mcvideo-group-A by creating a SIP message and setting the proper elements in the mcvideo-info MIME body
	2	check	SIP MESSAGE received at the MCVideo participating server of User 1
	3	check	The participating server check rules, maps identities and forwards the message to the controlling server
	4	check	The MCVideo controlling server loads the affiliated members of the mcvideo-group-A (either preconfigured or retrieved from the GMS) and creates a SIP message per each of the "n" members
	5	check	The MCVideo controlling server sends a notification of the reception of the alert to User 1 through the originating participating.
	6	check	Alert indication received at mcvideo_id_clientA
	7	check	"n" alert indicating SIP MESSAGES received at mcvideo_id_clientX
	8	verify	An indication of the Emergency alert is shown to the group members

## 7.2.94 MCVideo User cancels an emergency alert by sending a SIP MESSAGE [CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/02]

As a precondition of this test case, a group has entered the emergency state either upon the submission of an explicit SIP MESSAGE as in [CONN-MCVideo/ONN/EMERG-ALERT/MSG/01] (clause 7.2.93) or by piggybacking the <alert-ind> element in an emergency operation in a group call (i.e. either during setup or upgrade). Then, upon receiving a request from the MCVideo user to send an MCVideo emergency alert cancellation to the indicated MCVideo group and following the procedure in clause 11.2.1.2 in ETSI TS 124 281 [7] the client will check that this is an authorized request as determined by clause 6.2.8.1.6. Once checked, the MCVideo client shall generate a SIP MESSAGE request in accordance with ETSI TS 124 229 [6] and IETF RFC 3428 [42] equivalent to that in the previous test case but with the <alert-ind> element set to a value of "false". The originating participating server (clause 11.2.2.1) will forward the message to the controlling. The controlling server (clause 11.2.3.2) will generate an outgoing SIP MESSAGE request for each of the affiliated but not joined members of the group according to procedure in clause 6.3.3.1.11 with an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcvidoinfo> 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 an <alert-ind> element set to a value of "false".

Similar to the initiation, after replying with a SIP 200(OK) the controlling will later generate a SIP MESSAGE back to the cancelling user to indicate successful reception of the request for emergency alert cancellation (thus, setting the <alert-ind> element to a value of "false" and the <alert-ind-rcvd> to "true").

Message Sequence Diagram

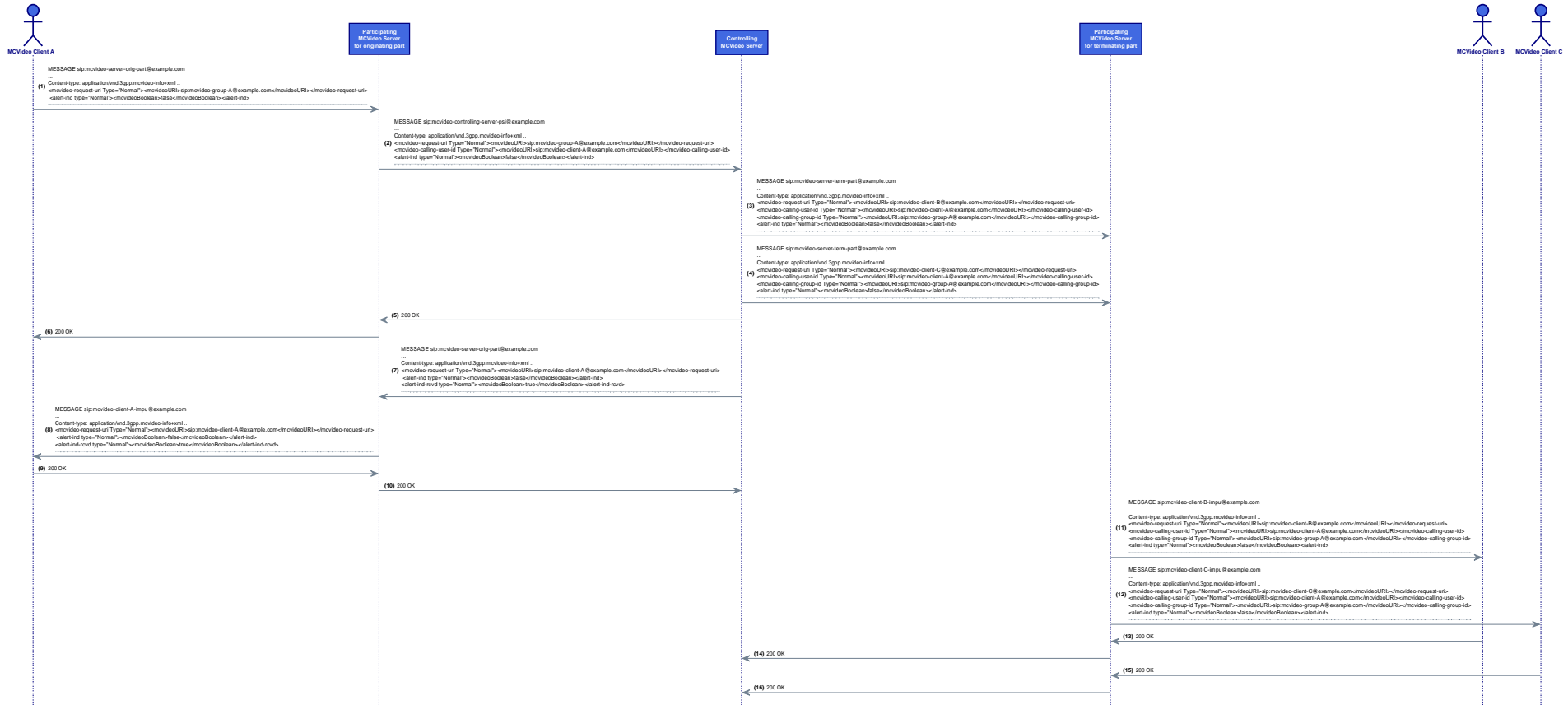


Figure 62aj: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/02 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 71aj: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for the cancellation of an emergency alert.		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system and users properly affiliated to the called chat group</li> <li>• User 1 had sent emergency alert state</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) triggers an emergency alert cancellation to mcvideo-group-A by creating a SIP message and setting the <alert-ind> to false in the mcvideo-info MIME body
	2	check	SIP MESSAGE received at the MCVideo participating server of User 1
	3	check	The participating server check rules, maps identities and forwards the message to the controlling server
	4	check	The MCVideo controlling server loads the affiliated members of the mcvideo-group-A (either preconfigured or retrieved from the GMS) and creates a SIP message per each of the "n" members
	5	check	The MCVideo controlling server sends a notification of the reception of the alert cancellation to User 1 through the originating participating.
	6	check	Alert cancellation indication received at mcvideo_id_clientA
	7	check	"n" alert cancellation indicating SIP MESSAGES received at mcvideo_id_clientX
	8	verify	All group members are notified of the cancellation and the originating client sets the internal status to "MVEA 1: no-alert".

### 7.2.95 MCVideo User cancels an emergency alert originated by other user by sending a SIP MESSAGE [CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/03]

This test case is equivalent to [CONN-MCVideo/ONN/EMERG-ALERT/MSG/02] (clause 7.2.94) but it's another user the one cancelling the emergency alert.

In order to do so the MCVideo client of the user cancelling an MCVideo emergency alert originated by another MCVideo will include the <originated-by> element set to the MCVideo ID of the MCVideo user who originated the MCVideo emergency alert.

In every clause in 11.1 in ETSI TS 124 281 [7] analysed in the previous test case the specific handling of the <originated-by> element is specified.

Message Sequence Diagram

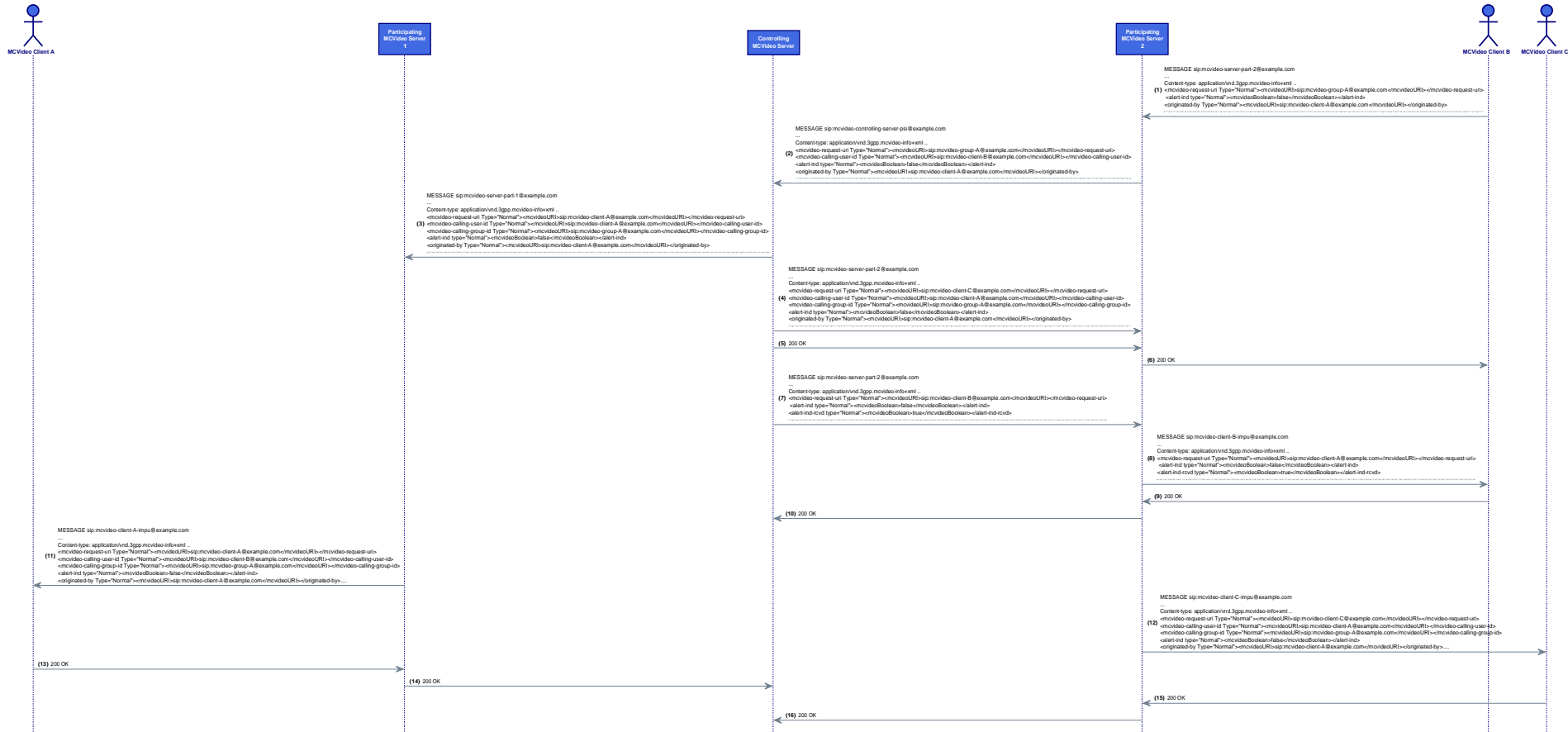


Figure 62ak: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/03 Message Sequence



Message Details

Trace Pending

Interoperability Test Description

**Table 71ak: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/03 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/03		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for the cancellation of an emergency alert originated by another user.		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system and users properly affiliated to the called chat group</li> <li>• User 1 had sent an emergency alert</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 2 (mcvideo_id_clientB@example.com) triggers an emergency alert to mcvideo-group-A by creating a SIP message, setting the <alert-ind> to false in the mcvideo-info MIME body, and <originated-by> to mcvideo_id_clientA
	2	check	SIP MESSAGE received at the MCVideo participating server of User 2
	3	check	The participating server check rules, maps identities and forwards the message to the controlling server
	4	check	The MCVideo controlling server loads the affiliated members of the mcvideo-group-A (either preconfigured or retrieved from the GMS) and creates a SIP message per each of the "n" members
	5	check	The MCVideo controlling server sends a notification of the reception of the cancellation of the alert to User 1 through the originating participating.
	6	check	Alert indication cancellation received at mcvideo_id_clientX
	7	check	"n" alert indicating SIP MESSAGES received at mcvideo_id_clientX
	8	verify	All group members are notified of the cancellation and the originated-by client sets the internal status to "MVEA 1: no-alert"

## 7.2.96 MCVideo client receives a notification of entry into a group geographic area [CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/04]

When the participating MCVideo function determines that the MCVideo client has entered a pre-defined group geographic area it will notify the MCVideo client that it has entered such pre-defined area requiring affiliation.

More specifically, when receiving a Location information report according to clause 18.2.4 in ETSI TS 124 281 [7] the participating MCVideo function shall follow the procedures in clause 6.3.3.1.22. Therefore, it shall generate, a SIP MESSAGE in accordance with ETSI TS 124 229 [6] and IETF RFC 3428 [42] that will include an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <mcvideo-request-uri> element set to the set to the group identity of the group for which a pre-defined group geographic area has been entered, the <alert-ind> element set to a value of "true", the <associated-group-id>element set to the MCVideo group ID of the group for which a pre-defined group geographic area has been entered and a <group-geo-area-ind>element set to a value of "true".

The Client following clause 12.1.1.4 ETSI TS 124 379 [9] will (or will not in case of ambient listening is occurring) display to the user that a group geographic area has been entered.

NOTE 1: Although the need for automatic affiliation is mentioned in clause 13.2.4, in the client side (clause 12.1.1.4) no procedure is explicitly triggered (but it is when leaving).

NOTE 2: An inconsistency has been identified in clause 6.3.3.1.22 regarding the value of mcptt-request-uri being either the MCPTT ID of the user or the group ID.



Message Details

Trace Pending

Interoperability Test Description

**Table 71a1: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/04 ITD**

Interoperability Test Description			
<b>Identifier</b>	CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/04		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for the cancellation of an emergency alert originated by another user.		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MC system and users properly affiliated to the called chat group</li> <li>• User 1 had sent an emergency alert</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 2 (mcvideo_id_clientB@example.com) triggers an emergency alert to mcvideo-group-A by creating a SIP message, setting the <alert-ind> to false in the mcvideo-info MIME body, and <originated-by> to mcvideo_id_clientA
	2	check	SIP MESSAGE received at the MCVideo participating server of User 2
	3	check	The participating server check rules, maps identities and forwards the message to the controlling server
	4	check	The MCVideo controlling server loads the affiliated members of the mcvideo-group-A (either preconfigured or retrieved from the GMS) and creates a SIP message per each of the "n" members
	5	check	The MCVideo controlling server sends a notification of the reception of the cancellation of the alert to User 1 through the originating participating.
	6	check	Alert indication cancellation received at mcvideo_id_clientX
	7	check	"n" alert indicating SIP MESSAGES received at mcvideo_id_clientX
	8	verify	All group members are notified of the cancellation and the originated-by client sets the internal status to "MVEA 1: no-alert"

## 7.3 Floor Controlling (FC)

### 7.3.1 Basic FC functionality [FC/BASIC/01]

This test shall verify the basic Floor Controlling functionality as defined by ETSI TS 124 380 [10]. In order to do so, after a successful establishment of a prearranged on-demand Group Call different users shall request the Token and Floor Control server capabilities on the controlling server shall be tested. For the test it is assumed that no Implicit Floor Control request has been included or that the token has been released previously, so that "Floor idle" state is considered as pre-condition.

Note that since MCPTT Floor Control protocol uses binary RTCP-based signalling, in the sequence diagram and message details the decoded meaning of (some of) the selected values for different meaning fields are displayed.

Message Sequence Diagram

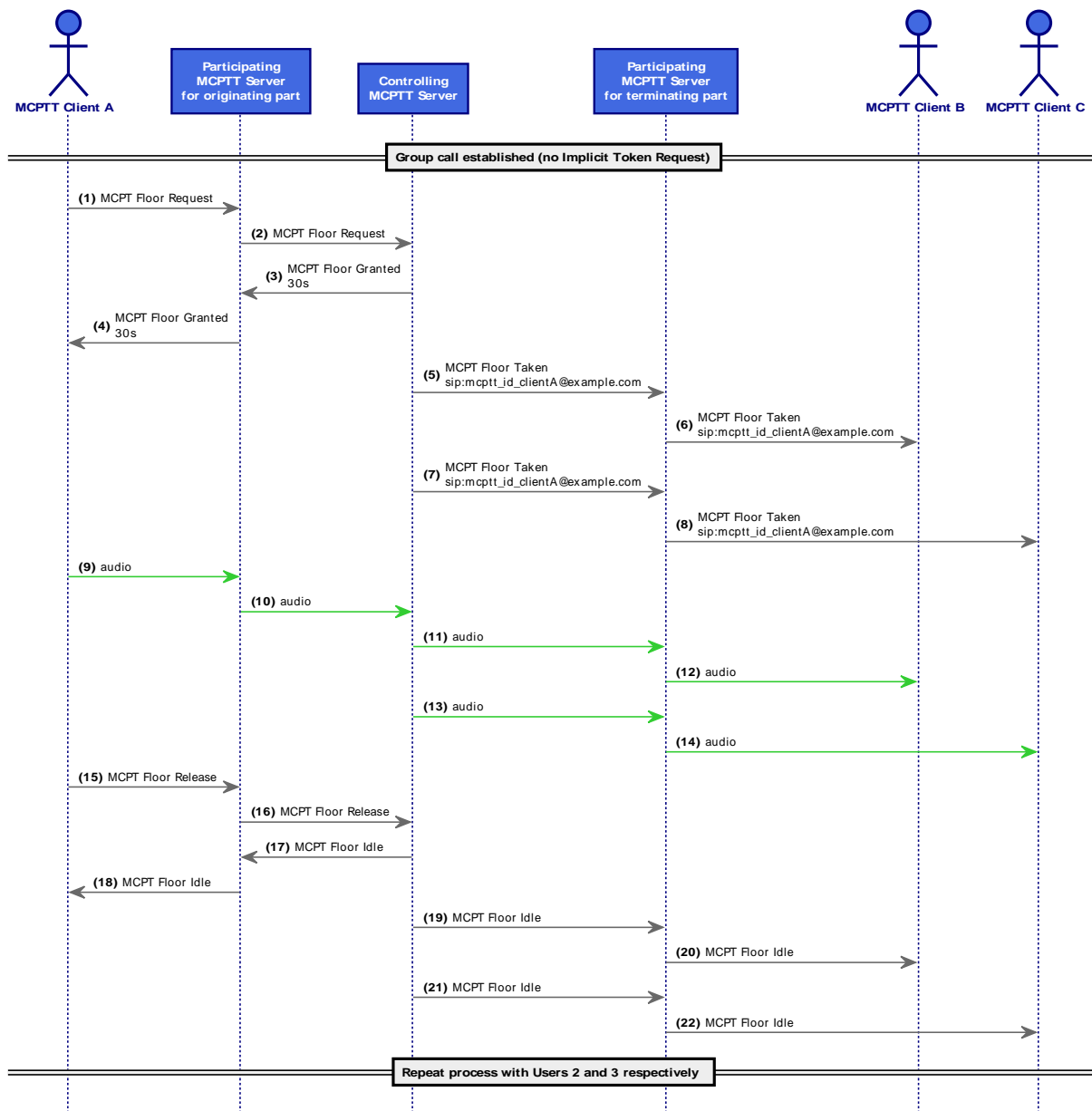


Figure 63: FC/BASIC/01 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 72: FC/BASIC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	FC/BASIC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT Floor Controlling capabilities in Clients and controlling		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS</li> <li>UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>On-demand pre-arranged Group Call properly established and in Floor-Idle state</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) pushes the PTT button
	2	check	RTCP App based MCPT Floor Request is sent to the participating
	3	check	Floor Request sent to the controlling
	4	check	Floor Granted (30s) sent back to User 1 and Floor Taken sent to Users 2 and 3
	5	verify	Uni-directional flow from User 1 to Users 2 and 3
	6	stimulus	User 1 releases the PTT button
	7	check	RTCP App based MCPT Floor Release is sent to the participating
	8	check	Floor Release sent to the controlling
	9	check	Floor Idle sent back to Users 1, 2 and 3
	10	verify	Floor available for further request

### 7.3.2 Basic FC functionality. Effect of Priorities [FC/BASIC/02]

This test case extends the previous basic on in clause 7.3.1 by showing the preemptiveness capabilities in the Floor Control when a user with higher priority requests the Token already granted to another lower-priority one. In fact as defined in clause 4.1.1.2 in ETSI TS 124 380 [10] whenever a new request with higher priority than the ongoing talk burst arrives, the floor control server revokes the current talk burst by sending a Floor Revoke message to the current talker. The current talker is interrupted and the current media burst is ended by the current floor participant by sending a Floor Release message. Then the floor control server sends a Floor Granted message to the revoking user and send Floor Taken message to other group members.

Therefore, the example in clause A.3.5 in ETSI TS 124 380 [10] will be followed. Note that, although the whole annex A is informative (not normative), it is referenced here in order to better illustrate the test case. Similarly clauses A.3.3 to A.3.4 in ETSI TS 124 380 [10] show other examples of "advanced" floor controlling mechanisms. However, these examples are not considered in the present document. Note that the max floor priority that can be requested in a Floor Request message is negotiated between the MCPTT client and the controlling MCPTT function using the "mc\_priority" fntp parameter. In the following sequence diagrams and messages it is assumed values 5 and 10 are compatible with the negotiated maximum value.

Message Sequence Diagram

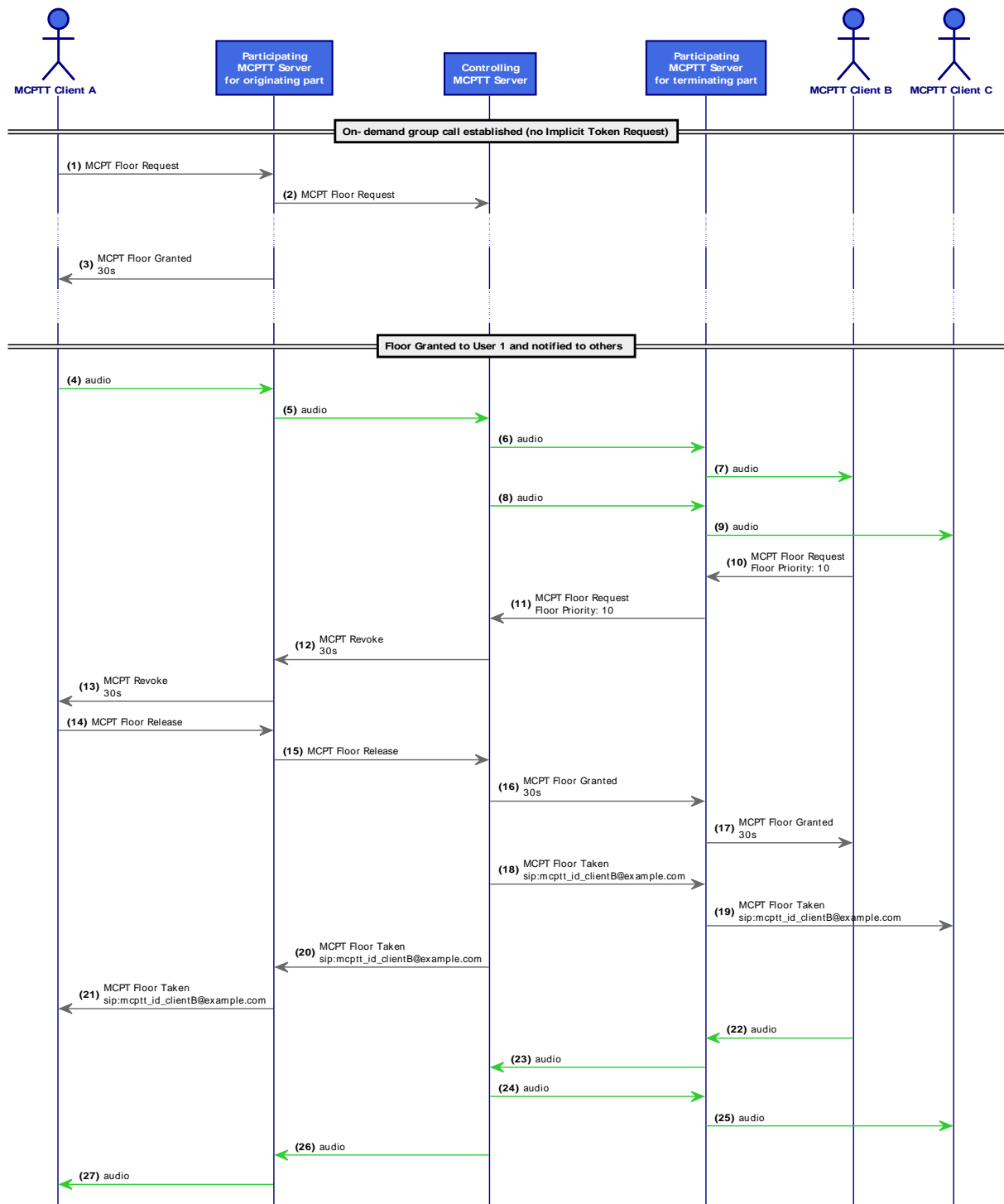


Figure 64: FC/BASIC/02 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 73: FC/BASIC/02 ITD

Interoperability Test Description			
<b>Identifier</b>	FC/BASIC/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT Floor Controlling capabilities in Clients and controlling. Effect of priorities will be checked.		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• On-demand pre-arranged Group Call properly established and User 1 has been granted the token</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 2 (mcptt_id_clientb@example.com) with higher priority pushes the PTT button
	2	check	Floor Request is sent to the participating
	3	check	Floor Request sent to the controlling
	4	check	Floor Revoked sent to User 1 which Releases the token explicitly
	5	check	Floor Granted sent to User 2 and Floor Taken sent to Users 1 and 3
	6	verify	Uni-directional flow from User 2 to Users 1 and 3

### 7.3.3 Advanced FC functionality. Floor control revoking upon expires (T2) [FC/ADV/01]

This test case extends the previous basic one in clause 7.3.1 by showing the effect of T2 timer expiration. As defined in clause 6.3.4.4.4 in ETSI TS 124 380 [10] when the T2 (Stop Talking) Timer expires, the following changes in the floor control states shall be carried out:

- 1) shall stop timer T1 (End of RTP media);
- 2) shall include the Reject Cause field with the <Reject Cause> value set to #2 (Media burst too long) in the Floor Revoke message sent in clause 6.3.4.5.2; and
- 3) shall enter the 'G: pending Floor Revoke'.

Such changes will result in revoking the previous grant and sending Floor Idle to all participants.



Message Sequence Diagram

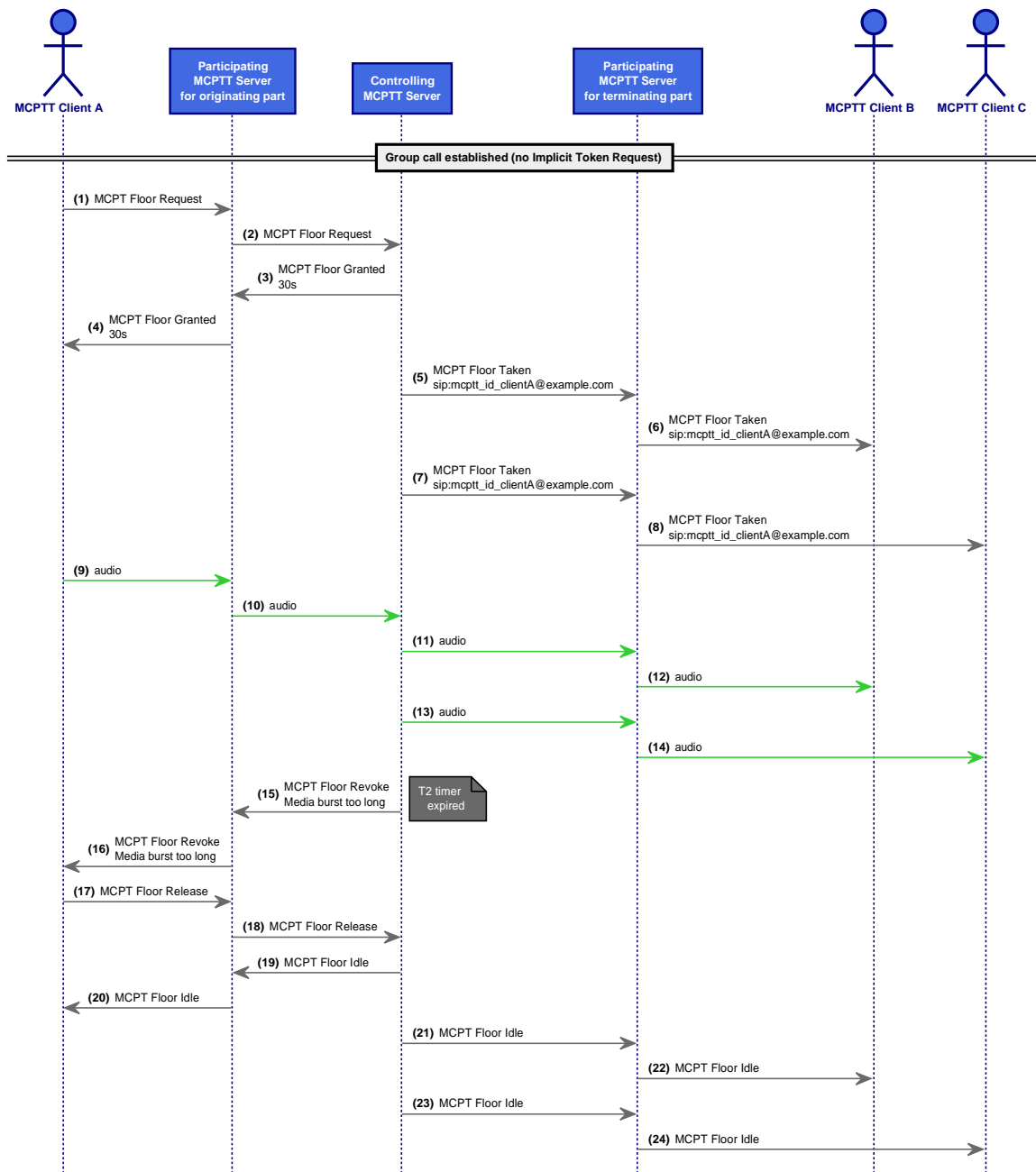


Figure 64a: FC/ADV/01 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 73a: FC/ADV/01 ITD

Interoperability Test Description			
<b>Identifier</b>	FC/ADV/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT Floor Controlling capabilities in Clients and controlling		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• On-demand pre-arranged Group Call properly established and in Floor-Taken state (floor granted to User 1)</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	Timer T2 (Stop Talking) expires
	2	check	MCPT Floor Revoke is sent to the participating
	3	check	Floor Revoke sent to User 1
	4	check	User 1 sends Floor Release to the participating
	5	check	Floor Release sent to the controlling
	6	check	Floor Idle sent back to Users 1, 2 and 3
	7	verify	Floor available for further request

### 7.3.4 Advanced FC functionality. Floor control queueing upon release [FC/ADV/02]

This test case extends the one in clause 7.3.1 by showing the effect of supporting the queueing of Floor Requests as specified in clause 6.2 and clause 4.1.1.2. in ETSI TS 124 380 [10]. According to this behaviour if request queueing is used, if a group member requests for permission to talk by sending a Floor Request message during a talk burst, the floor control server sends Floor Queue Position Info message indicating that there is no permission but the request is queued for potential permission when the current talk burst ends. Then a "queued" indication is generated for the user and the ongoing talk burst continues. By the end of the talk burst, the floor control server gives the talk permission to the first pending request in the queue. For this, it sends the same messages as in the beginning of a talk burst; Floor Granted message to the permitted user and Floor Taken message to other group members. The permitted user is expected to press the PTT button after the permission tone within a well-defined short period of time. If PTT button is pressed the media burst continues normally until it is released. If not, the MCPTT client loses the talk permission.

Message Sequence Diagram

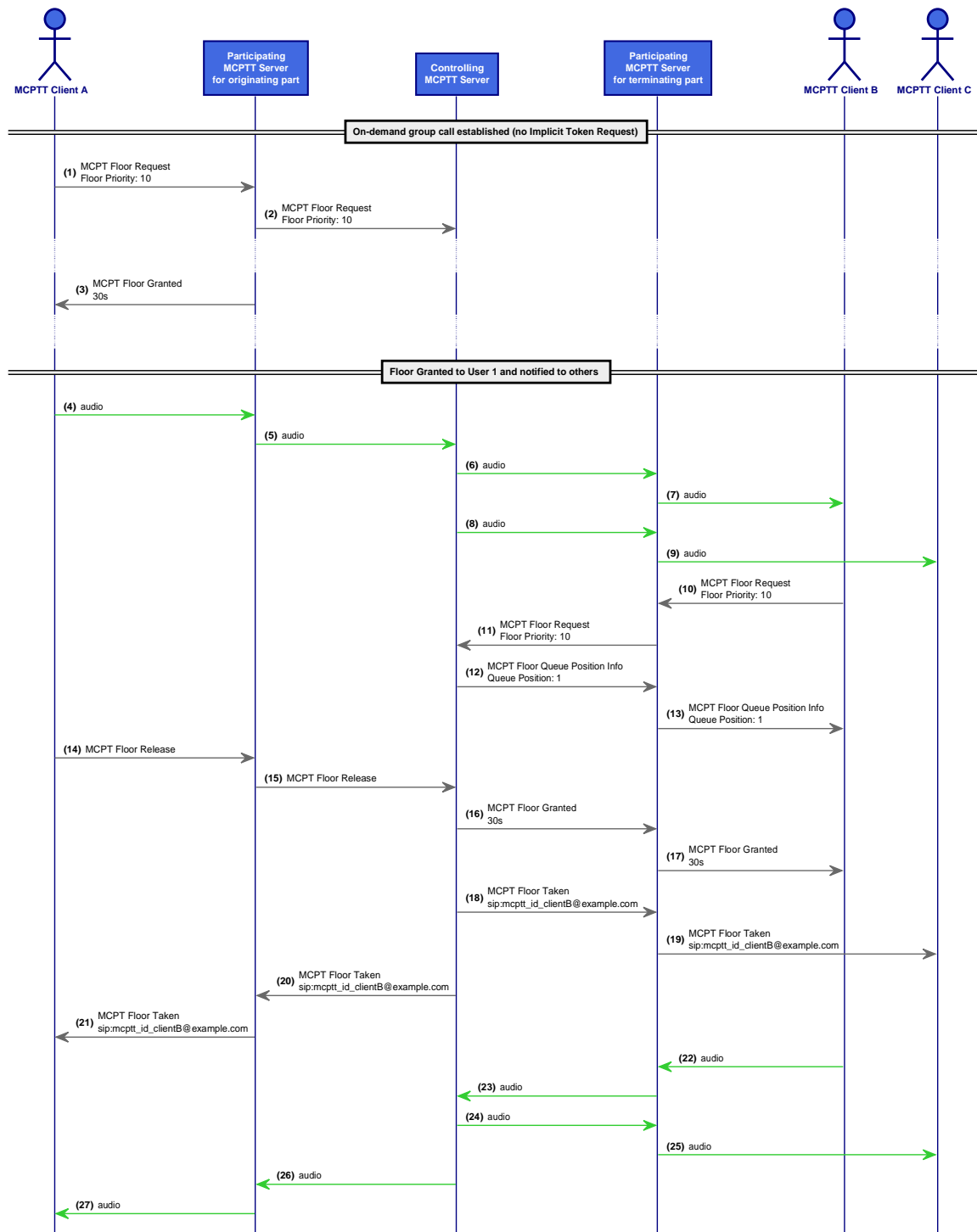


Figure 64b: FC/ADV/02 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 73b: FC/ADV/02 ITD

Interoperability Test Description			
<b>Identifier</b>	FC/ADV/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT Floor Controlling capabilities in Clients and controlling		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• On-demand pre-arranged Group Call properly established and in Floor-Taken state (floor granted to User 1)</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 2 (Client B) presses the PTT button
	2	check	MCPT Floor Request is sent to the participating
	3	check	Floor Request sent to the controlling
	4	check	Floor Queue position info sent back to User 2
	5	stimulus	User 1 releases the token (i.e. by releasing the PTT button)
	6	check	Floor Release arrives at the Controlling
	7	check	Floor Granted message sent to User 2
	8	check	Floor Taken sent to all the users
	9	verify	User 2 is allowed to talk and media stream arrive at the rest

### 7.3.5 Advanced FC functionality. Floor control queueing upon revoke [FC/ADV/03]

This test case extends those in clauses 7.3.3 and 7.3.4 by showing the effect of supporting the queueing of Floor Requests as specified in clause 6.2 and clause 4.1.1.2. in ETSI TS 124 380 [10] when the timer T2 expires according to clause 6.3.4.4.4 in ETSI TS 124 380 [10]. Similarly to those two test cases the floor control server gives the talk permission to the first pending request in the queue as soon as the floor is released due to the timer expiration.

Message Sequence Diagram

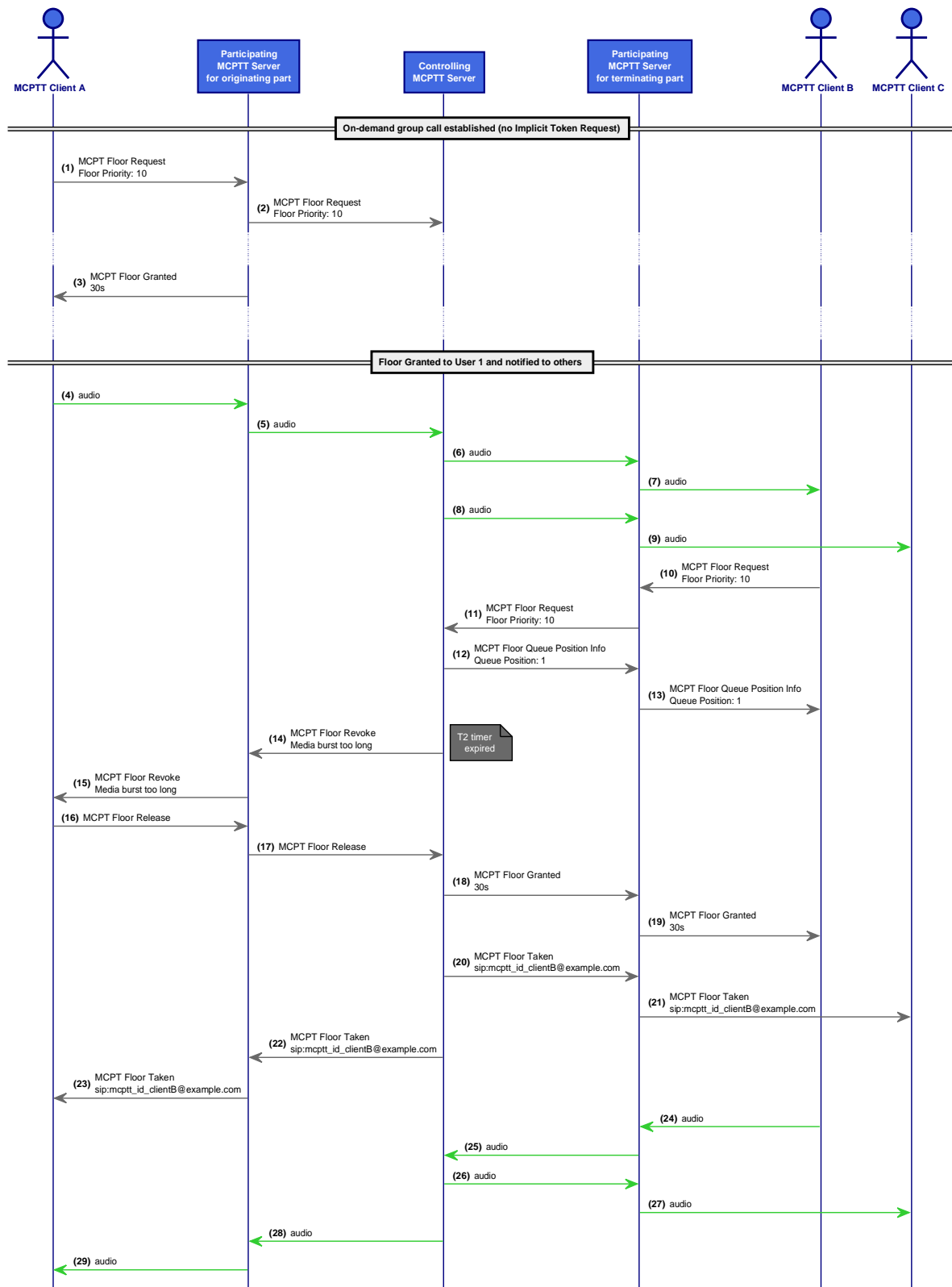


Figure 64c: FC/ADV/03 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 73c: FC/ADV/03 ITD

Interoperability Test Description			
<b>Identifier</b>	FC/ADV/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT Floor Controlling capabilities in Clients and controlling		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• On-demand pre-arranged Group Call properly established and in Floor Taken state (floor granted to User 1)</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 2 (Client B) presses the PTT button
	2	check	MCPT Floor Request is sent to the participating
	3	check	Floor Request sent to the controlling
	4	check	Floor Queue position info sent back to User 2
	5	stimulus	User 1 releases the token (i.e. by releasing the PTT button)
	6	check	Floor Release arrives at the Controlling
	7	check	Floor Granted message sent to User 2
	8	check	Floor Taken sent to all the users
	9	verify	User 2 is allowed to talk and media stream arrive at the rest

### 7.3.6 Sharing/Display of FA during basic FC operations [FC/FA/BASIC/01]

This TC reproduces the behaviour of the basic Floor Control test case [FC/BASIC/01] but including not only the mcptt-id but the FA in all the FC signalling.

This test shall verify the basic Floor Controlling functionality as defined by ETSI TS 124 380 [10]. In order to do so, after a successful establishment of a prearranged on-demand Group Call different users shall request the Token and Floor Control server capabilities on the controlling server shall be tested. For the test it is assumed that no Implicit Floor Control request has been included or that the token has been released previously, so that "Floor idle" state is considered as pre-condition. In this case, according to clause 8.2.3.19 in ETSI TS 124 380 [10], a Functional Alias field identifying the Functional Alias that the MCPTT user has chosen to use will be included in the RTCP based signalling.

Message Sequence Diagram

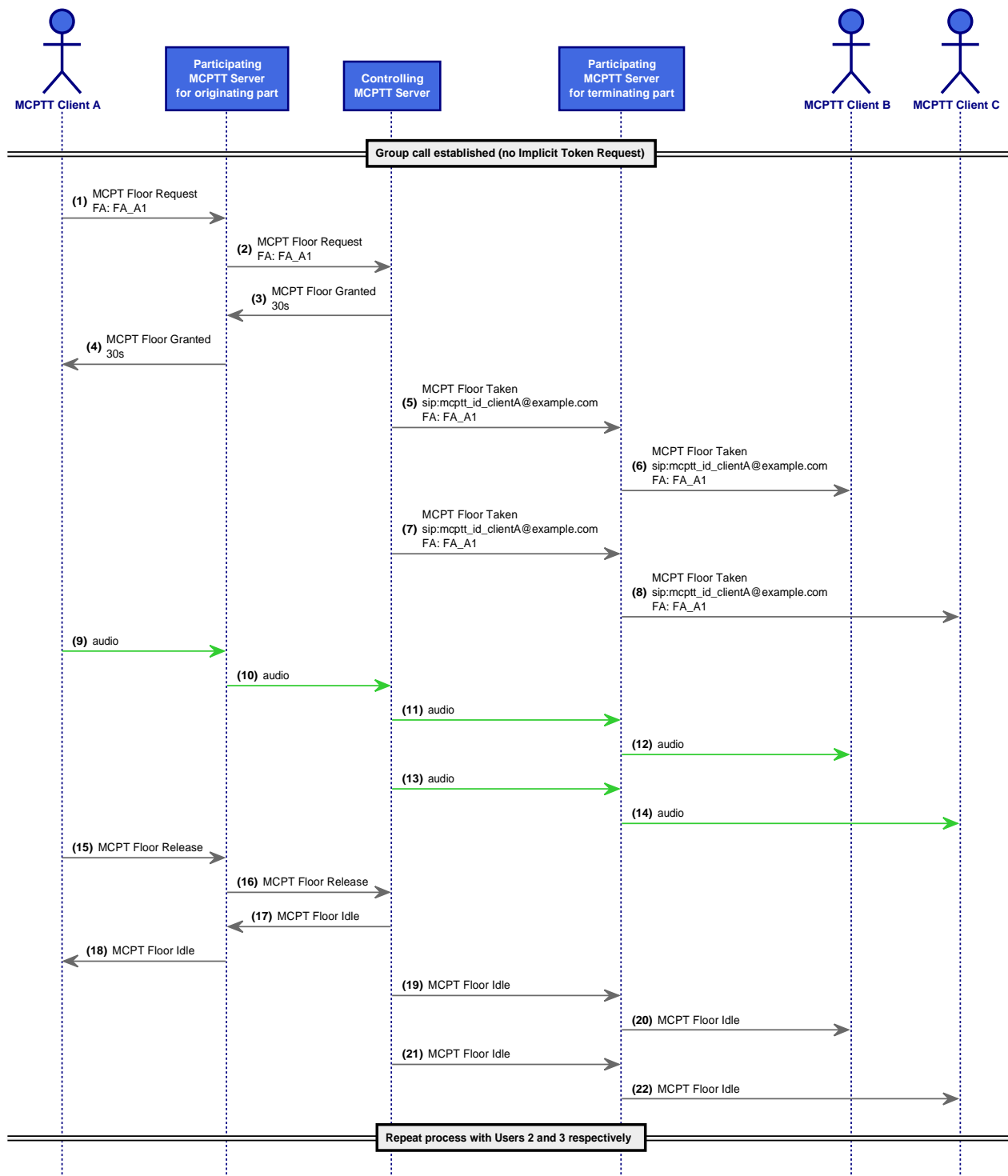


Figure 64d: FC/FA/BASIC/01 Message Sequence

Message Details

Trace Pending



## Interoperability Test Description

Table 73d: FC/FA/BASIC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	FC/FA/BASIC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, MCPTT Floor Controlling capabilities with embedded FA signalling in Clients and controlling		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) pushes the PTT button
	2	check	RTCP App based MCPT Floor Request is sent to the participating
	3	check	Floor Request sent to the controlling (including FA)
	4	check	Floor Granted (30s) sent back to User 1 and Floor Taken sent to Users 2 and 3 (with FA information) and therefore displayed accordingly in their Clients
	5	verify	Uni-directional flow from User 1 to Users 2 and 3
	6	stimulus	User 1 releases the PTT button
	7	check	RTCP App based MCPT Floor Release is sent to the participating
	8	check	Floor Release sent to the controlling
	9	check	Floor Idle sent back to Users 1, 2 and 3
	10	verify	Floor available for further request

### 7.3.7 Multi-talker basic operation [FC/MT/BASIC/01]

This TC shows the multi-talker functionality in Floor Control operations. As defined by ETSI TS 124 380 [10], if a group is configured as multi-talker group, a floor request can be granted to a group member allowed to talk in that group without revoking the current talker, provided the number of simultaneous talkers is not greater than the "maximum number of simultaneous talkers".

When compared with the classical FC operation in FC/BASIC/02 and as described in clause 6.3.4.4.7a, when a Floor Control Server is already in State: 'G: Floor Taken' and upon the reception of a Floor Request message it will allow media from both the current speaker(s) and from the participant now requesting floor whenever the maximum number of simultaneous talkers applicable for multi-talker control is not reached.

Therefore it will send a Floor Granted message to the requesting floor participant and shall include the Floor Indicator field with the I-bit set to '1' (Multi-talker) and the SSRC of granted floor participants and add the MCPTT ID of the user to which the floor is granted to the list of currently granted talkers.

Additionally, one instance of Timers T1, T2 and T20 is running per talker that is granted the floor and the floor control arbitration logic maintains a list of MCPTT IDs of the currently granted talkers.

Message Sequence Diagram

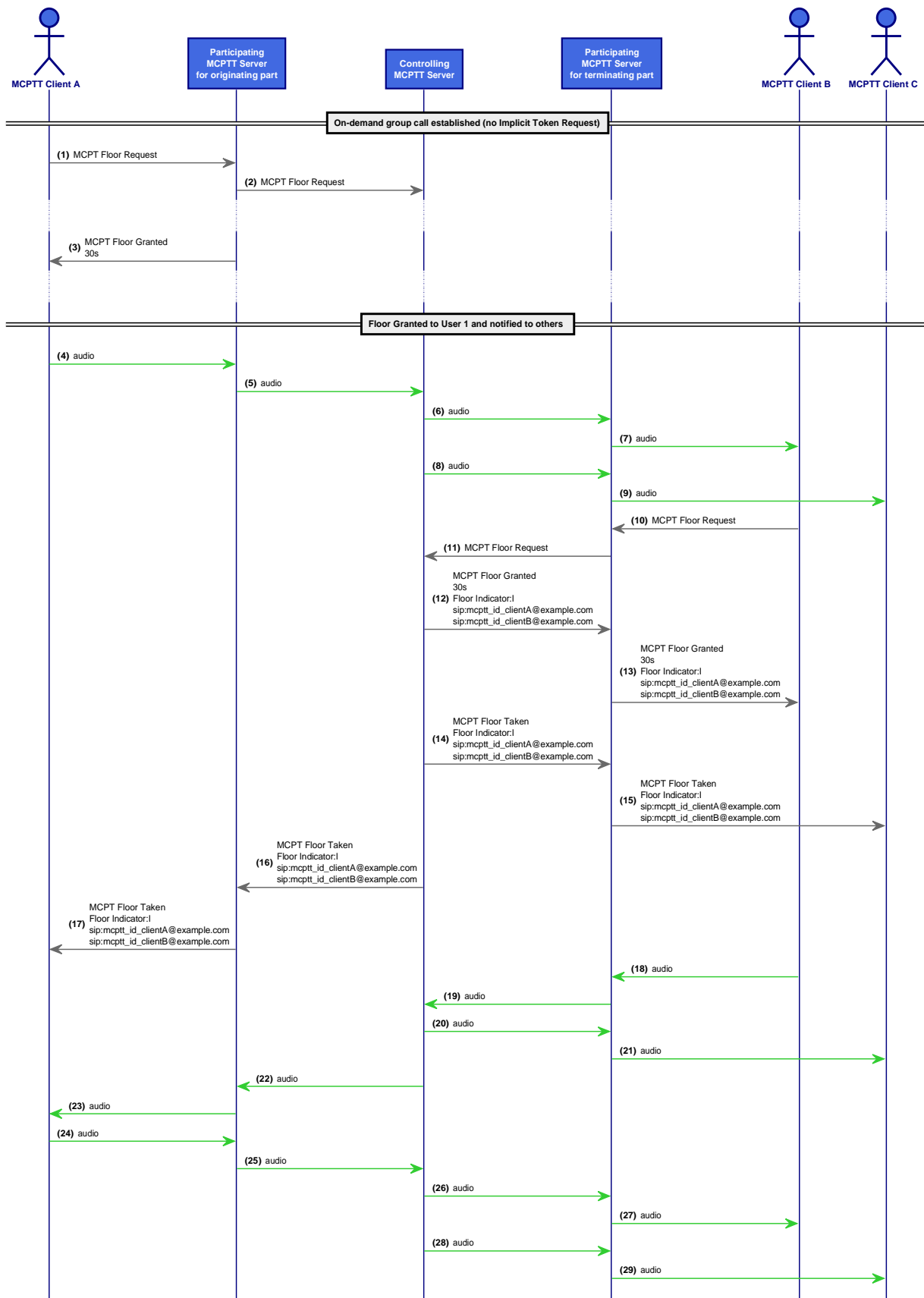


Figure 64e: FC/MT/BASIC/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 73e: FC/MT/BASIC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	FC/MT/BASIC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, MCPTT Floor Controlling capabilities in a multi-talker scenario		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Floor granted to User 1</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 2 (mcptt_id_clientB@example.com) pushes the PTT button
	2	check	RTCP App based MCPT Floor Request is sent to the participating
	3	check	Floor Request sent to the controlling
	4	check	Floor Granted (30s) sent back to User 2 and Floor Taken sent to Users 1 and 3 (with list of granted users including User 1 and User 2)
	5	verify	Uni-directional flow from User 1 to Users 2 and 3
	6	verify	Uni-directional flow from User 2 to Users 1 and 3

## 7.4 Registration and Service Authorization (RegAuth)

### 7.4.1 MCPTT User authenticates to the IdMS [REGAUTH/IDMSAUTH/01]

MCPTT User gets authenticated in the IdMS using OpenID Connect Core 1.0 as specified in ETSI TS 124 482 [12]. Web-based user and password mechanism shall be used so that the MCPTT Client receives the access and identity tokens that shall be later used for all the service authorization mechanisms.

NOTE: MCDData and MCVideo define a sibling Registration and Service Authorization mechanism, for the 2<sup>nd</sup> Plugtests MCPTT will be used to test Registration and Service Authorization.

#### Message Sequence Diagram

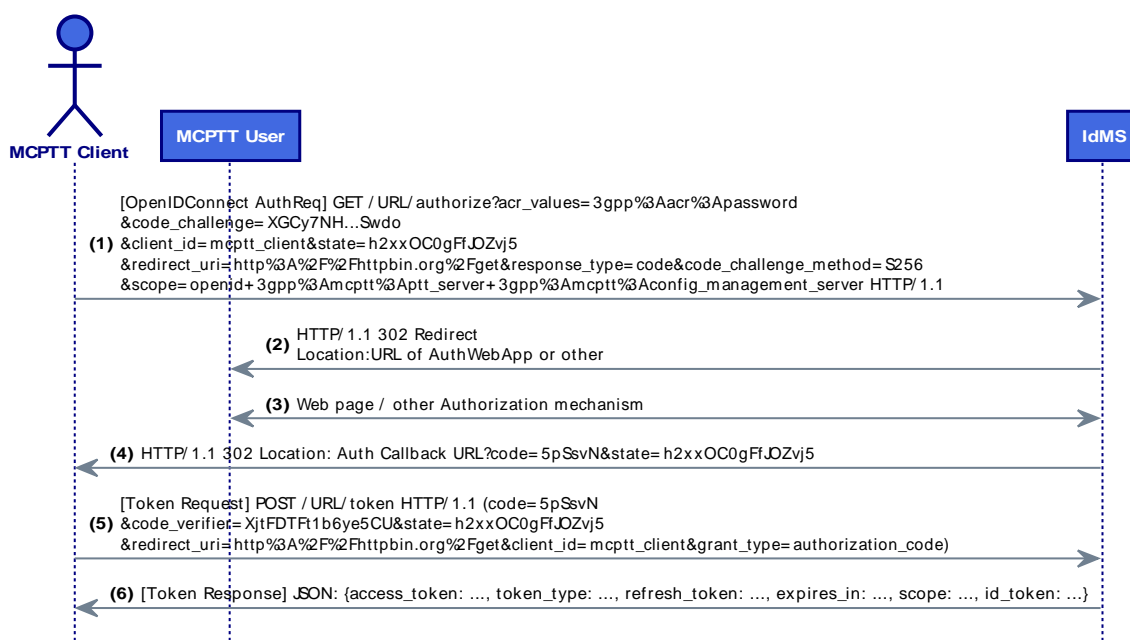


Figure 65: REGAUTH/IDMSAUTH/01 Message Sequence

#### Message Details

Trace Pending

## Interoperability Test Description

**Table 74: REGAUTH/IDMSAUTH/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	REGAUTH/IDMSAUTH/01		
<b>Test Objective</b>	Verify IP connectivity, proper access from the MCPTT Client to the IdMS and successful authentication mechanism		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• OpenID Connect Core 1.0 (see ETSI TS 124 482 [12])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_IDMS</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario, access to the IdMS via the proper APN and tunnelling mechanism if any</li> </ul>		
Test Sequence	Step	Type	Description
	1	stimulus	User 1 either using CMS URL or hardcoded ones access the IdMS
	2	check	Initial Authentication Request
	3	check	User properly authenticate using web based user & password
	4	check	User requests all the token associated to the relevant scopes
	5	verify	User 1 correctly authenticated and data and identity tokens correctly received

#### 7.4.2 MCPTT User gets registered and authorized using third-party registration [REGAUTH/3PRTYREG/REGISTER/01]

Assuming an IMS Core, the MCPTT Client registers and the S-CSCF sends a third-party registration. In this test case and associated diagram and message details it is assumed that the MCPTT User has previously authenticated with the IdMS and got the mcptt\_id and needed Access Token, so that it would be included in the mcptt-info body in the original REGISTER (see clauses 7.2.1 and 7.3.2 in ETSI TS 124 379 [9]). If this is not the case, the 3<sup>rd</sup> party register shall not be used for Service Authorization and later PUBLISH including not only poc-settings but also needed credentials shall be mandatory.

NOTE: MCDATA and MCVIDEO define a sibling Registration and Service Authorization mechanism, for the 2<sup>nd</sup> Plugtests MCPTT will be used to test Registration and Service Authorization.

## Message Sequence Diagram

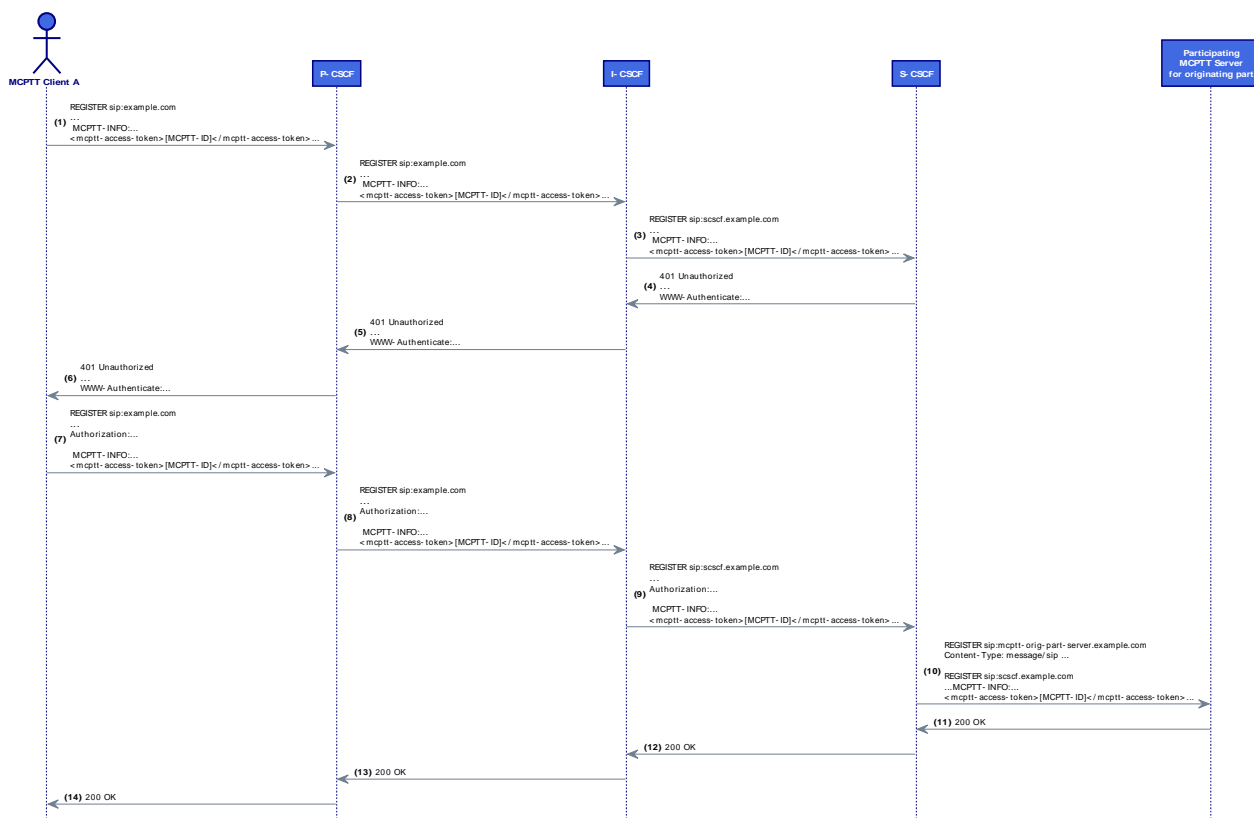


Figure 66: REGAUTH/3PRTYREG/REGISTER/01 Message Sequence

## Message Details

[1] UE --&gt; P-CSCF

```

REGISTER sip:example.com SIP/2.0
Via: SIP/2.0/UDP IP:PORT;branch=BRANCH
From: <sip:mcptt-client-A-impu@example.com>;tag=TAG
To: <sip:mcptt-client-A-impu@example.com>
Contact: sip:mcptt-client-A-impu@IP:PORT;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";+g.3gpp.mcptt
...
Content-Type: application/vnd.3gpp.mcptt-info+xml
  
```

```

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0">
  <mcptt-Params>
    <mcptt-access-token type="Normal">
      <mcpttString>eyJhbGciOiJIUzI1ciIuLn...stripped...u5CSpyHI</mcpttString>
    </mcptt-access-token>
    <mcptt-client-id type="Normal">
      <mcpttString>urn:uuid:00000000-0000-1000-8000-AABCCDDEEFF</mcpttString>
    </mcptt-client-id>
  </mcptt-Params>
</mcpttinfo>
  
```

[10] S-CSCF --&gt; MCPTT Participating

```

REGISTER sip:mcptt-orig-part-server.example.com SIP/2.0
Via: SIP/2.0/UDP 51.254.109.162:6060;branch=BRANCH
To: <sip:mcptt-client-A-impu@example.com>
From: <sip:scscf.example.com>;tag=TAG
Event: registration
Contact: <sip:scscf.example.com:6060>
...
Content-Type: message/sip
  
```

```
REGISTER sip:scscf.example.com SIP/2.0
Via: SIP/2.0/UDP IP:PORT;branch=BRANCH
From: <sip:mcptt-client-A-impu@example.com>;tag=TAG
To: <sip:mcptt-client-A-impu@example.com>
Contact: sip:mcptt-client-A-impu@IP:PORT;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcptt";+g.3gpp.mcptt
...
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttinfo:1.0">
  <mcptt-Params>
    <mcptt-access-token type="Normal">
      <mcpttString>eyJhbGciOiJIUzI5c...stripped...u5CSpyHI</mcpttString>
    </mcptt-access-token>
    <mcptt-client-id type="Normal">
      <mcpttString>urn:uuid:00000000-0000-1000-8000-AABCCDDEEFF</mcpttString>
    </mcptt-client-id>
  </mcptt-Params>
</mcpttinfo>
```

## Interoperability Test Description

**Table 75: REGAUTH/3PRTYREG/REGISTER/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	REGAUTH/3PRTYREG/REGISTER/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing and 3 <sup>rd</sup> party registration to the MCPTT Participating		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_REGAUTH</li> <li>• IMS_3RDPARTYREGISTER</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• Client previously authenticated in the IdMS or the Identity and Access Token have been received by other mean</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) registers with its IMPU and MCPTT specific info mcptt-info
	2	check	REGISTER sent to the P-CSCF with mcptt-info body
	3	check	REGISTER sent to the S-CSCF
	4	check	S-CSCF creates a 3 <sup>rd</sup> Party Register towards the participating and embeds the original REGISTER as body
	5	verify	User 1 correctly registered to the IMS Core and MCPTT participating. IMPU vs. mcptt_id binding and service authorization completed

### 7.4.3 MCPTT User gets authorized using PUBLISH mechanism [REGAUTH/PUBLISH/REGISTER/01]

If the User was not authenticated with the IdMS prior to the IMS REGISTER, it shall submit later the MCPTT User credentials for proper Service Authorization and binding between IMPU and mcptt\_id. Following clause 7.3.3 in ETSI TS 124 379 [9] the MCPTT server shall support obtaining service authorization specific information from a SIP PUBLISH request for both MCPTT server settings (using an Event header field set to the "poc-settings" and an application/poc-settings+xml MIME body) and Service Authorization by an additional application/vnd.3gpp.mcptt-info+xml MIME body containing an <mcptt-access-token> element and an <mcptt-client-id> element.

**NOTE:** MCDATA and MCVIDEO define a sibling Registration and Service Authorization mechanism, for the 2<sup>nd</sup> Plugtests MCPTT will be used to test Registration and Service Authorization.



## Message Sequence Diagram

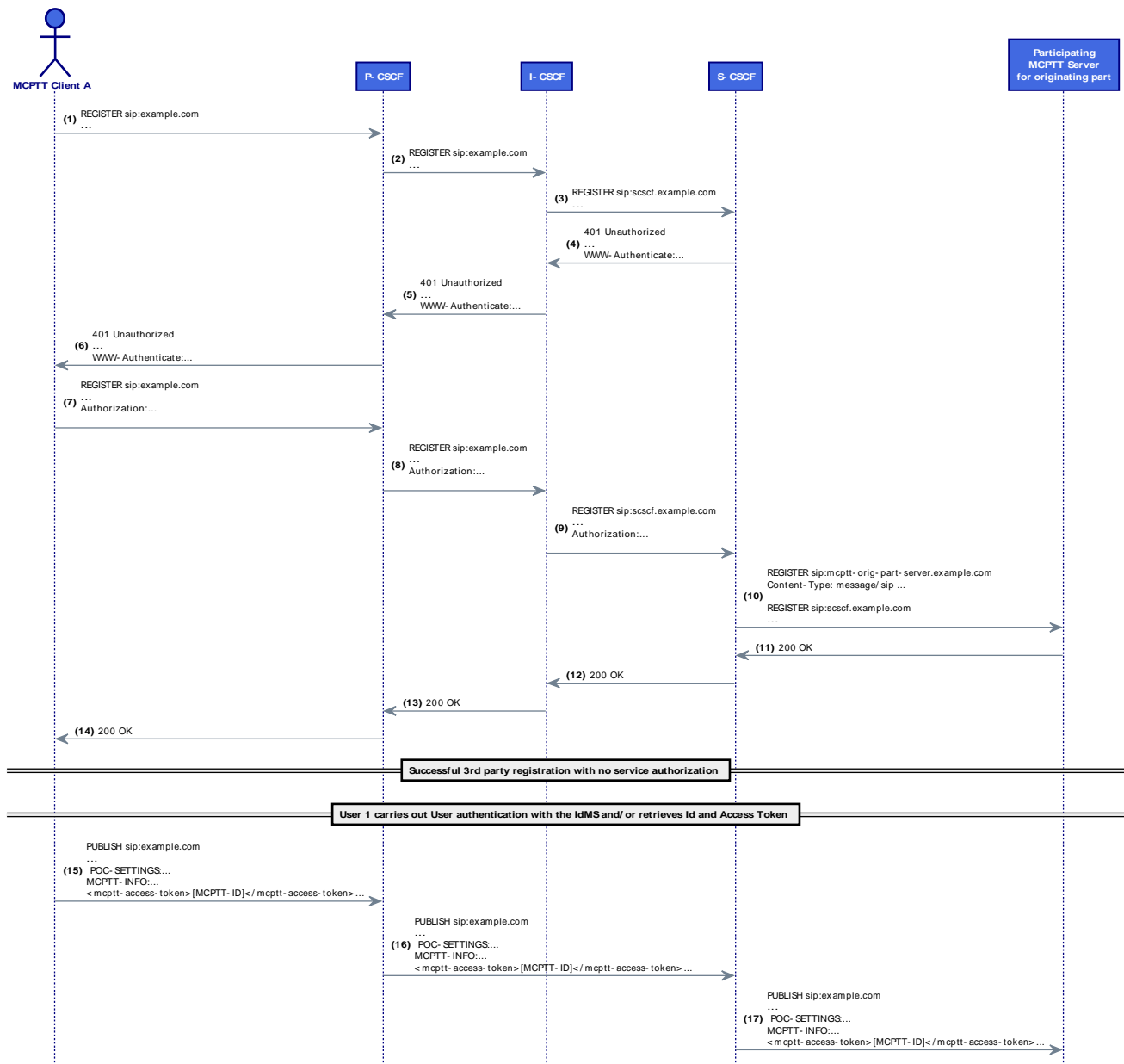


Figure 67: REGAUTH/PUBLISH/REGISTER/01 Message Sequence

## Message Details

[1] UE --> P-CSCF

```
REGISTER sip:example.com SIP/2.0
Via: SIP/2.0/UDP IP:PORT;branch=BRANCH
From: <sip:mcptt-client-A-impu@example.com>;tag=TAG
To: <sip:mcptt-client-A-impu@example.com>
Contact: sip:mcptt-client-A-impu@IP:PORT;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcptt";+g.3gpp.mcptt
...
```

[10] S-CSCF --> MCPTT Participating

```
REGISTER sip:mcptt-orig-part-server.example.com SIP/2.0
Via: SIP/2.0/UDP 51.254.109.162:6060;branch=BRANCH
To: <sip:mcptt-client-A-impu@example.com>
From: <sip:scscf.example.com>;tag=TAG
Event: registration
```

```
Contact: <sip:scscf.example.com:6060>
...
Content-Type: message/sip

REGISTER sip:scscf.example.com SIP/2.0
Via: SIP/2.0/UDP IP:PORT;branch=BRANCH
From: <sip:mcptt-client-A-impu@example.com>;tag=TAG
To: <sip:mcptt-client-A-impu@example.com>
Contact: sip:mcptt-client-A-impu@IP:PORT;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-
service.ims.icsi.mcptt";+g.3gpp.mcptt
...

[15] UE --> P-CSCF

PUBLISH sip:mcptt-orig-part-server.example.com SIP/2.0
...
Content-Type: multipart/mixed; boundary=[boundary]

--[boundary]
Content-Type: application/poc-settings+xml
...

--[boundary]
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0">
  <mcptt-Params>
    <mcptt-access-token type="Normal">
      <mcpttString>eyJhbGciOiJIUzI5c...stripped...u5CSpyHI</mcpttString>
    </mcptt-access-token>
    <mcptt-client-id type="Normal">
      <mcpttString>urn:uuid:00000000-0000-1000-8000-AABBCCDDEEFF</mcpttString>
    </mcptt-client-id>
  </mcptt-Params>
</mcpttinfo>

--[boundary]
```

## Interoperability Test Description

Table 76: REGAUTH/PUBLISH/REGISTER/01 ITD

Interoperability Test Description			
<b>Identifier</b>	REGAUTH/PUBLISH/REGISTER/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, 3 <sup>rd</sup> party registration to the MCPTT Participating and SIP PUBLISH based service authorization mechanism		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_PUBAUTH</li> <li>• IMS_3RDPARTYREGISTER</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• Proper configuration of PCC related Functional elements (P-CSCF and PCRF)</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) registers with its IMPU REGISTER sent to the P-CSCF without mcptt-info body
	2	check	REGISTER sent to the S-CSCF
	3	check	REGISTER sent to the S-CSCF
	4	check	S-CSCF creates a 3 <sup>rd</sup> Party Register towards the participating and embeds the original REGISTER as body
	5	check	Upon successful user authentication to the IdMS the Client sends a PUBLISH including poc-settings and mcptt_info with the credentials
	6	verify	User 1 correctly registered to the IMS Core and MCPTT participating. IMPU vs. mcptt_id binding and service authorization completed

## 7.5 Policing (PCC)

### 7.5.0 General

Although in the 3GPP Release 14 the MCPTT-Pre-emption feature and enhanced shared resources have been introduced in the 2<sup>nd</sup> Plugtests the basic mechanisms will be evaluated.

Originally on-demand private call was used as an example of a call type responsible for triggering the PCC procedures. Later, Pre-Established Sessions (PES) have been included in clauses 7.5.5 and 7.5.6.

In order to define the test cases for PES there was a debate among the Plugtests community regarding PCC triggering time (i.e. upon PES setup or upon REFER/re-INVITE in PES): Triggering PCC upon PES setup would honor stage 2 rationale "After a pre-established session is established, a media bearer carrying the media and media control messages is always active." and "... avoids the need to negotiate media parameters (including evaluating ICE candidates) and reserving bearer resources during the MC service call/session establishment that results in delayed MC service call/session establishment." (clause 10.3.1 in ETSI TS 123 280 [2]). Although this stage 2 definition would suggest the PCC mechanism should be always triggered upon PES setup, stage 3 definition of procedures do not specify the moment and may allow other approaches. Furthermore, this timing may result in thousands of dormant GBR bearers been allocated regardless being actually used with possibly a relevant impact on radio resources (depending on eNodeB's scheduler in both the uplink and downlink).

On the other hand, triggering upon REFER would not be possible for the PES in the terminating side in clause 7.5.5 in automatic commencement mode since the SIP signalling would not arrive at the IMS core (MCPC would be used instead) and would demand additional REFER parsing logic in P-CSCF.

Considering these constraints and that, from an interface point of view (Rx or MCPTT-5), there would be no difference between both cases, both examples would be provided when possible in clauses 7.5.5 and 7.5.6.

### 7.5.1 Setup of a Unicast MC Bearer by SIP Core/IMS [PCC/BEARERSETUP/01]

A SIP/Core IMS compatible with MCPTT specific RX interface definition shall be able to signal required QoS. The overall procedure is defined in Stage 2 ETSI TS 123 379 [4], clauses 5.2.9.3, 9.2.2.3.1, 9.2.2.3.2, 10.11.2 and 10.11.3.

In order to evaluate the interface an on-demand private call will be used.

#### Message Sequence Diagram

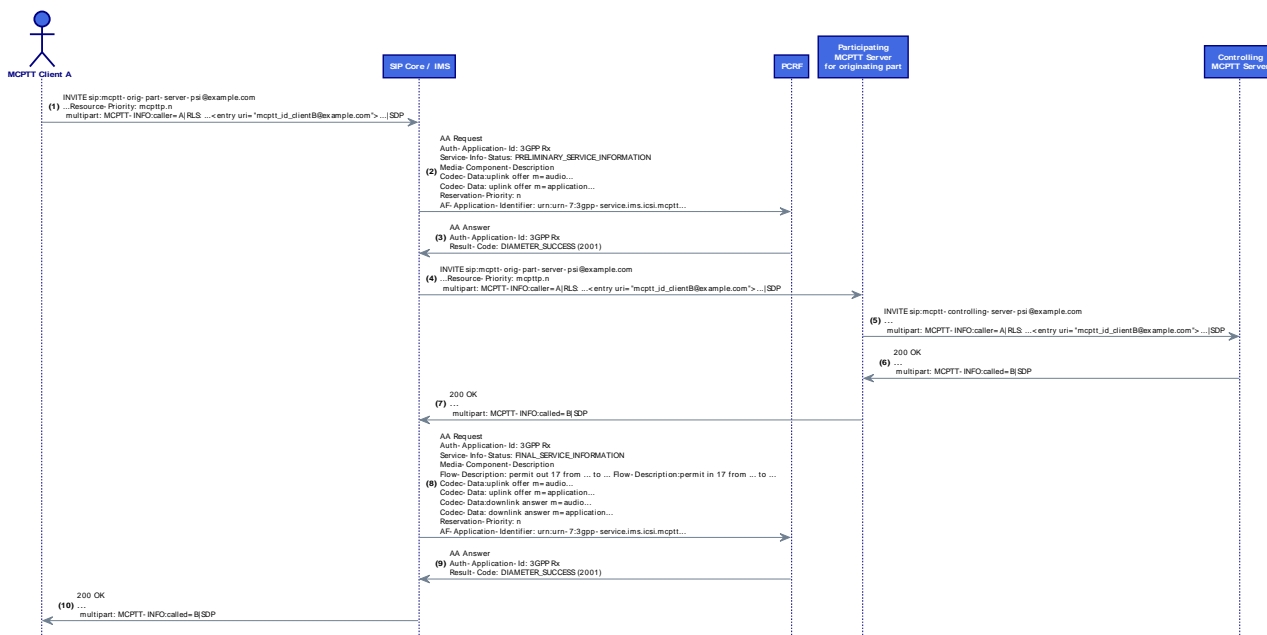


Figure 68: PCC/BEARERSETUP/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 77: PCC/BEARERSETUP/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	PCC/BEARERSETUP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and IMS PCC mechanisms supporting MCPTT applications		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_MCPTT-FC (clause 6.5)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> <li>IMS_RX (clause 6.4)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls User 2 (mcptt_id_clientB@example.com)
	2	check	Dialog creating INVITE received at the P-CSCF
	3	check	The P-CSCF signals via DIAMETER the QoS requirement to the PCRF
	4	check	User 2 accepts the private call and all the signalling is completed
	5	verify	Call connected, unicast MC bearer established and media flows exchanged

## 7.5.2 Setup of a Unicast MC Bearer by MCPTT Participating AS [PCC/BEARERSETUP/02]

Equivalent to clause 7.5.1 but it is the Participating AS the responsible for interacting with the PCRF using the MCPTT-5 reference point (equivalent to RX interface).

Message Sequence Diagram

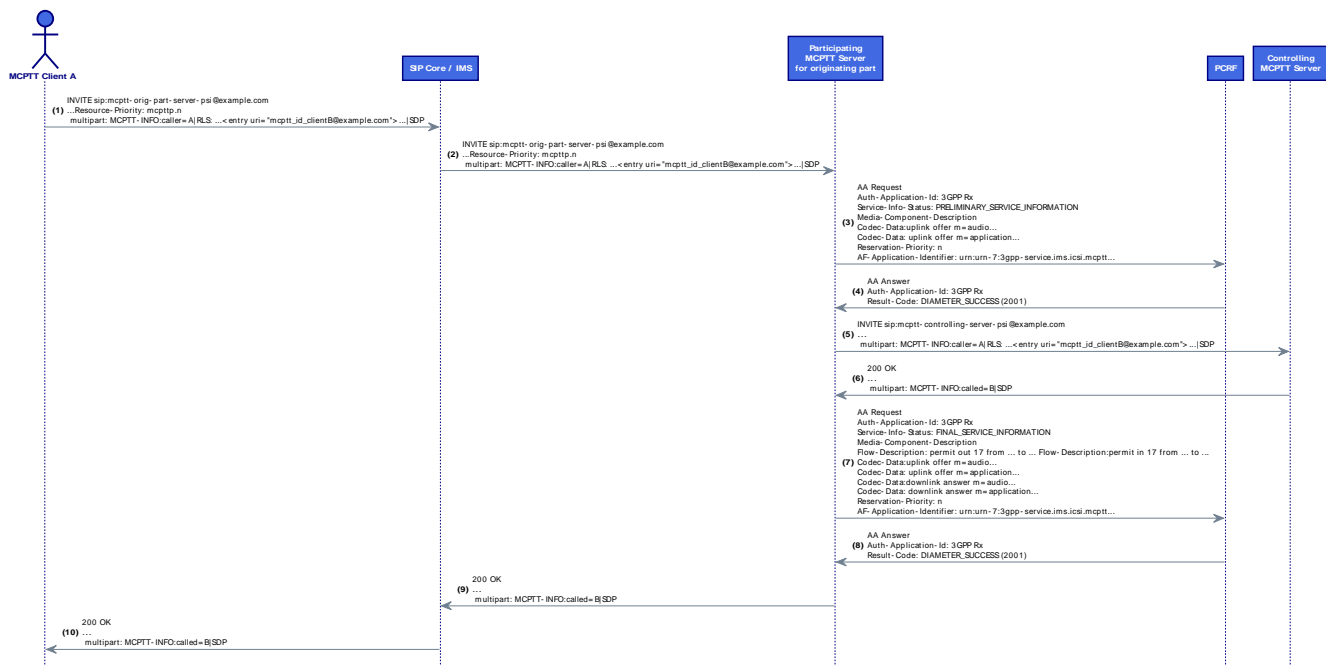


Figure 69: PCC/BEARERSETUP/02 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 78: PCC/BEARERSETUP/02 ITD

Interoperability Test Description			
<b>Identifier</b>	PCC/BEARERSETUP/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT participating signalling MCPTT PCC applications		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_RX, MCPTT-Part_MCPTT-FC (clause 6.5)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls User 2 (mcptt_id_clientB@example.com)
	2	check	The call setup traverses the IMS Core without triggering any PCC mechanism
	3	check	Dialog creating INVITE received at the MCPTT participating server of User 1
	4	check	The participating signals via DIAMETER the QoS requirement to the PCRF
	5	check	User 2 accepts the private call and all the signalling is completed
	6	verify	Call connected, unicast MC bearer established and media flows exchanged

### 7.5.3 Update of a Unicast MC Bearer by SIP Core/IMS [PCC/BEARERUPDATE/01]

Upon a change in an on-going session's characteristics (i.e. due to an upgrade to emergency or imminent-peril call) a SIP/Core IMS compatible with MCPTT specific RX interface definition shall be able to update the required QoS. In order to evaluate the interface an on-demand private call will be used.

Message Sequence Diagram

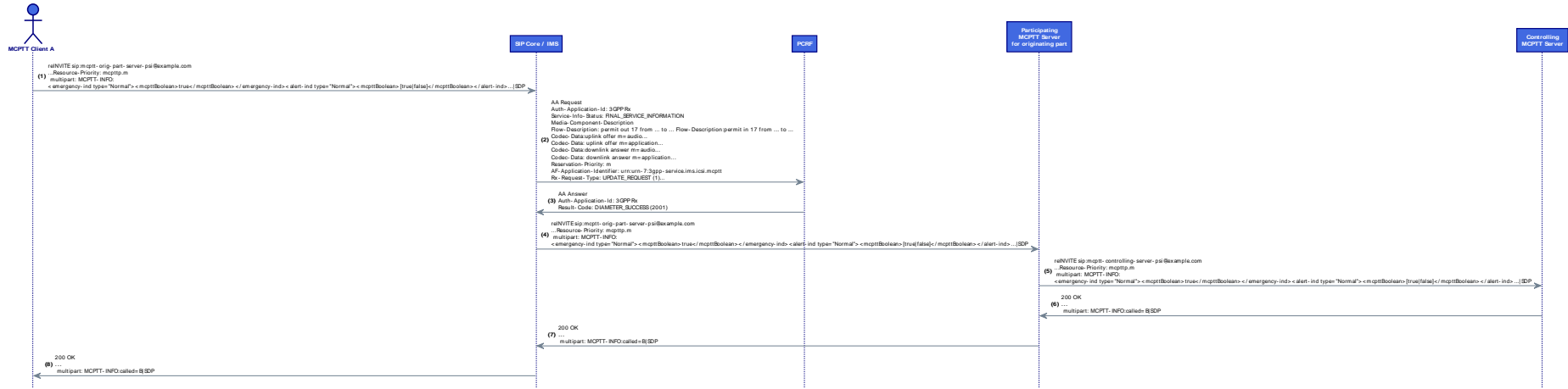


Figure 70: PCC/BEARERUPDATE/01 Message Sequence



Message Details

Trace Pending

Interoperability Test Description

**Table 79: PCC/BEARERUPDATE/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	PCC/BEARERUPDATE/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and IMS PCC mechanisms supporting MCPTT applications		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> <li>• IMS_RX (clause 6.4)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Ongoing private call between User 1 and User 2 with certain bearer conditions</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	Change in the conditions of the ongoing call
	2	check	(re)INVITE received at the P-CSCF
	3	check	The P-CSCF signals via DIAMETER the new QoS requirement to the PCRF
	4	verify	Call ongoing, unicast MC bearer updated

## 7.5.4 Update of a Unicast MC Bearer by MCPTT Participating AS [PCC/BEARERUPDATE/02]

Equivalent to clause 7.5.3 but it is the Participating AS the responsible for interacting with the PCRF using the MCPTT-5 reference point (equivalent to RX interface).

Message Sequence Diagram



Figure 71: PCC/BEARERUPDATE/02 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 80: PCC/BEARERUPDATE/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	PCC/BEARERUPDATE/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT participating signalling MCPTT PCC applications		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_RX, MCPTT-Part_MCPTT-FC (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Ongoing private call between User 1 and User 2 with certain bearer conditions</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	Change in the conditions of the ongoing call
	2	check	The reINVITE traverses the IMS Core without triggering any PCC mechanism
	3	check	reINVITE received at the MCPTT participating server of User 1
	4	check	The participating signals via DIAMETER the updated QoS requirement to the PCRF
	5	verify	Call ongoing, unicast MC bearer updated

### 7.5.5 Setup of a Unicast MC Bearer by SIP Core/IMS using pre-established sessions [PCC/BEARERSETUP/03]

A SIP/Core IMS compatible with MCPTT specific RX interface definition shall be able to signal required QoS using also pre-established sessions. The overall procedure is defined in Stage 2 ETSI TS 123 379 [4], clauses 5.2.9.3, 9.2.2.3.1, 9.2.2.3.2, 10.11.2 and 10.11.3.

NOTE: Following the rationale in clause 7.5, the triggering of the bearer setup has been considered in two tentative cases: Upon the initial INVITE (during PES setup) or upon the final REFER/REINVITE. As aforementioned, the second case would not be applicable for the terminating side in automatic commencement mode (but yes in manual and imminent peril/emergency calls).

Message Sequence Diagram

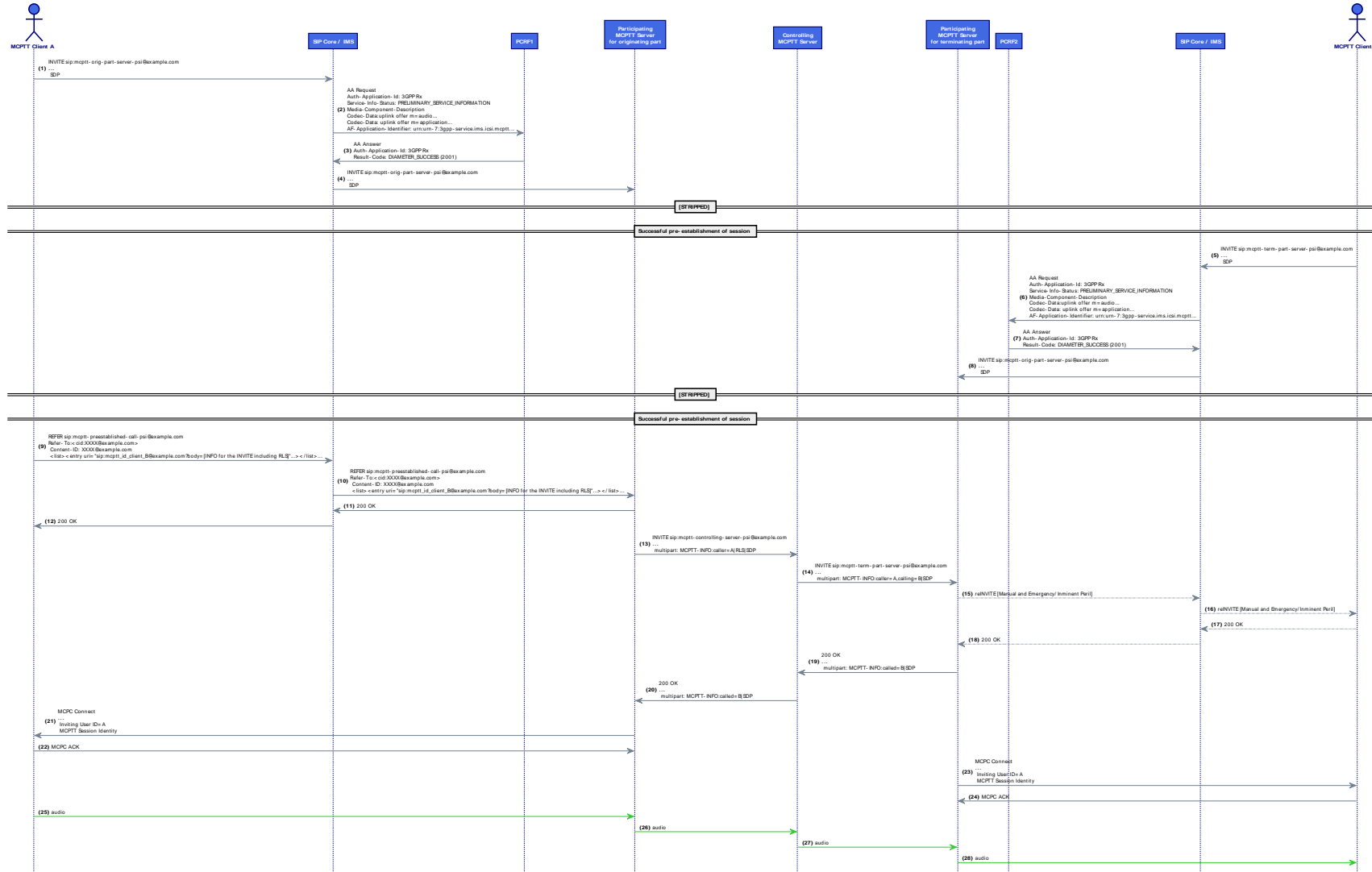


Figure 72: PCC/BEARERSETUP/03 (option a) Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 81: PCC/BEARERSETUP/03 ITD**

Interoperability Test Description			
<b>Identifier</b>	PCC/BEARERSETUP/03		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and IMS PCC mechanisms supporting MCPTT applications		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_MCPTT-FC (clause 6.7)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.8)</li> <li>IMS_RX (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	The MCPTT clients of User 1 (mcptt_id_clientA@example.com) and User 2 (mcptt_id_clientB@example.com) pre-establish their respective session to the proper participating, procedure repeated for both ends
	2	check	Dialog creating INVITE received at P-CSCF
	3	check	Sessions pre-established
	4	stimulus	User 1 calls User 2 using pre-established session
	5	check	REFER is created and sent to the participating server of User 1
	6	check	The P-CSCF would be able to parse the REFER and signal via DIAMETER the QoS requirement to the PCRF
	7	check	The participating server creates the proper INVITE with the data embedded in the REFER and forwards it to the controlling
	8	check	The controlling server forwards the INVITE to the participating server of the callee and sends a 200 ok back to the participating of the caller
	9	check	The participating of the callee notifies him/her by sending an MCPC Connect message (reINVITE in manual or emergency/imminent peril calls)
	10	check	An MCPC Connect message is triggered by the originating participating servers
	11	verify	NOT POSSIBLE in the terminating side (in automatic commencement calls)

Message Sequence Diagram

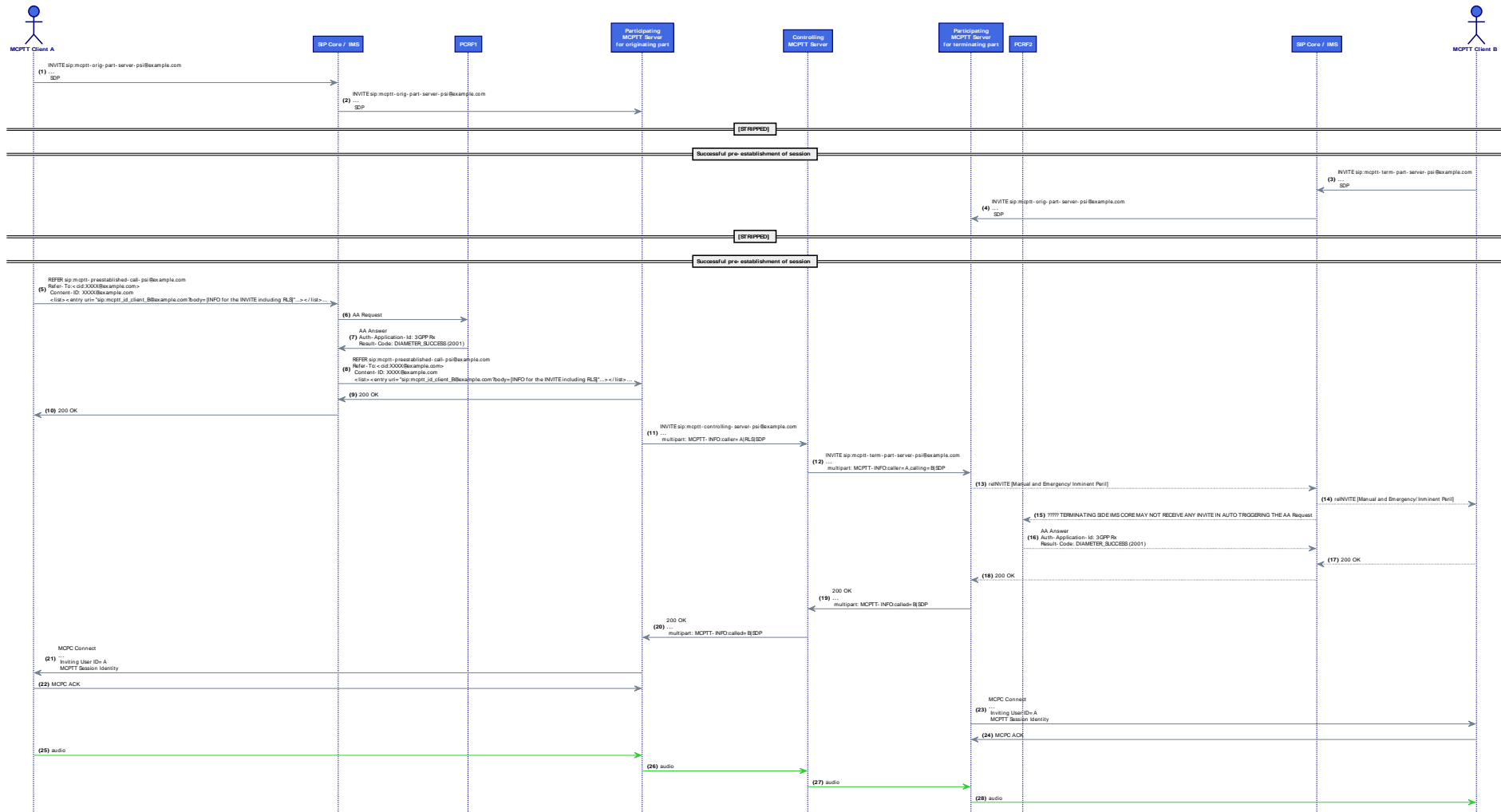


Figure 73: PCC/BEARERSETUP/03 (option b) Message Sequence

Table 82: PCC/BEARERSETUP/03 ITD

Interoperability Test Description			
<b>Identifier</b>	PCC/BEARERSETUP/03		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and IMS PCC mechanisms supporting MCPTT applications		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.8)</li> <li>• IMS_RX (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	The MCPTT clients of User 1 (mcptt_id_clientA@example.com) and User 2 (mcptt_id_clientB@example.com) pre-establish their respective session to the proper participating, procedure repeated for both ends
	2	check	Dialog creating INVITE received at P-CSCF
	3	check	Sessions pre-established
	4	stimulus	User 1 calls User 2 using pre-established session
	5	check	REFER is created and sent to the participating server of User 1
	6	check	The P-CSCF would be able to parse the REFER and signal via DIAMETER the QoS requirement to the PCRF
	7	check	The participating server creates the proper INVITE with the data embedded in the REFER and forwards it to the controlling
	8	check	The controlling server forwards the INVITE to the participating server of the callee and sends a 200 ok back to the participating of the caller
	9	check	The participating of the callee notifies him/her by sending an MCPC Connect message (reINVITE in manual or emergency/imminent peril calls)
	10	check	An MCPC Connect message is triggered by the originating participating servers
	11	verify	NOT POSSIBLE in the terminating side (in automatic commencement calls)

### 7.5.6 Setup of a Unicast MC Bearer by MCPTT Participating AS using pre-established sessions [PCC/BEARERSETUP/04]

A SIP/Core IMS compatible with MCPTT specific RX interface definition shall be able to signal required QoS using also pre-established sessions. The overall procedure is defined in Stage 2 ETSI TS 123 379 [4], clauses 5.2.9.3, 9.2.2.3.1, 9.2.2.3.2, 10.11.2 and 10.11.3.

**NOTE:** Following the rationale in clause 7.5, the triggering of the bearer setup has been considered in two tentative cases: Upon the initial INVITE (during PES setup) or upon the final REFER/REINVITE. As aforementioned, the second case would not be applicable for the terminating side in automatic commencement mode (but yes in manual and imminent peril/emergency calls).

Message Sequence Diagram

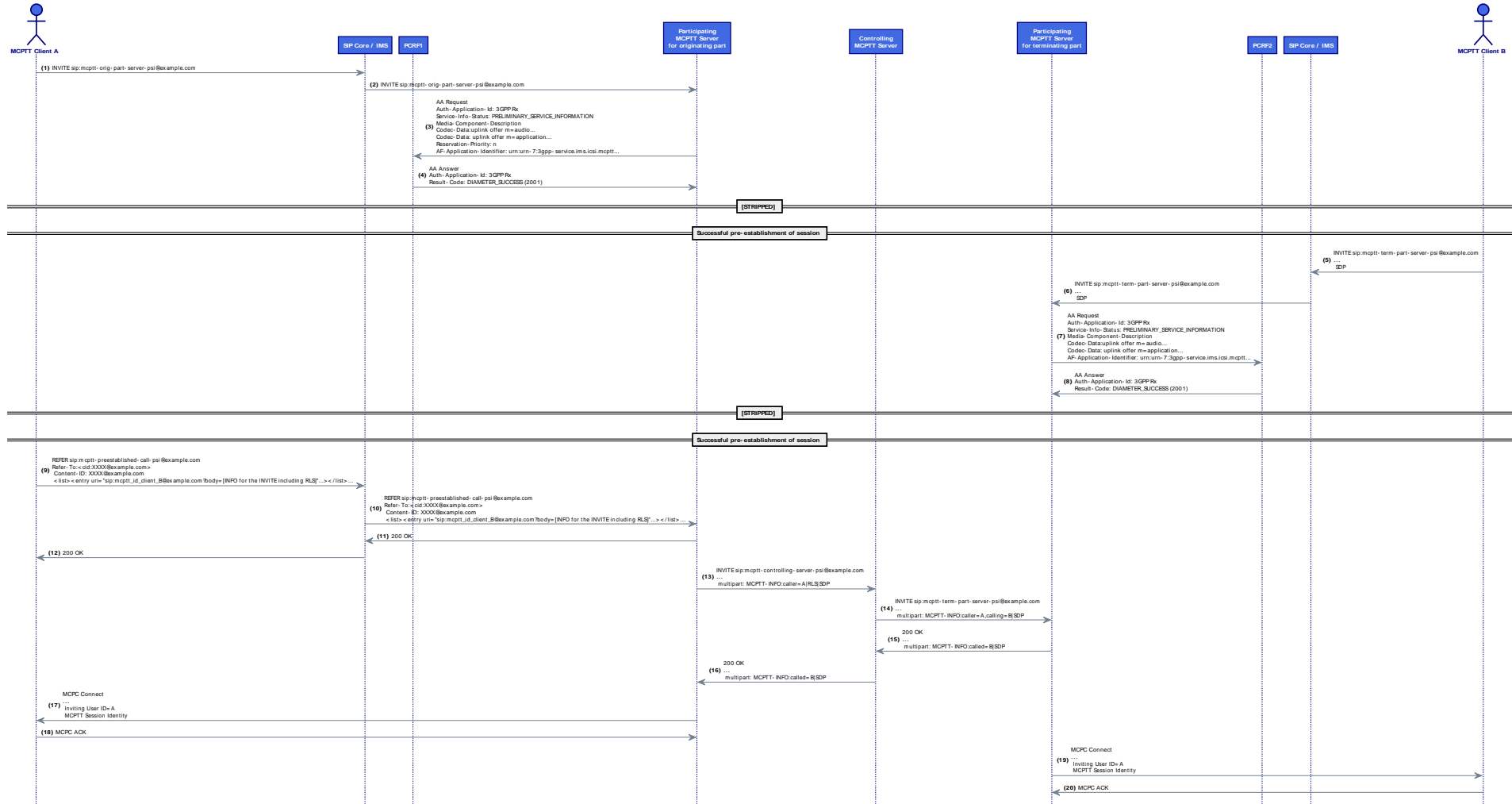


Figure 74: PCC/BEARERSETUP/04 (option a) Message Sequence



## Interoperability Test Description

Table 83: PCC/BEARERSETUP/04 ITD

Interoperability Test Description			
<b>Identifier</b>	PCC/BEARERSETUP/04		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and IMS PCC mechanisms supporting MCPTT applications		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.8)</li> <li>• IMS_RX (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	The MCPTT clients of User 1 (mcptt_id_clientA@example.com) and User 2 (mcptt_id_clientB@example.com) pre-establish their respective session to the proper participating, procedure repeated for both ends
	2	check	The call setup traverses the IMS Core without triggering any PCC mechanism
	3	check	Dialog creating INVITE received at the MCPTT participating server of User 1
	4	check	The participating signals via DIAMETER the QoS requirement to the PCRF
	5	check	Sessions pre-established
	6	stimulus	User 1 calls User 2 using pre-established session
	7	check	REFER is created and sent to the participating server of User 1
	8	check	The participating server creates the proper INVITE with the data embedded in the REFER and forwards it to the controlling
	9	check	The controlling server forwards the INVITE to the participating server of the callee and sends a 200 ok back to the participating of the caller
	10	check	The participating of the callee notifies him/her by sending an MCPC Connect message (reINVITE in manual or emergency/imminent peril calls)
	11	check	An MCPC Connect message is triggered by the originating participating servers
	12	verify	Call connected using the pre-established unicast MC bearers in both originating and terminating sides and media flows exchanged

Message Sequence Diagram

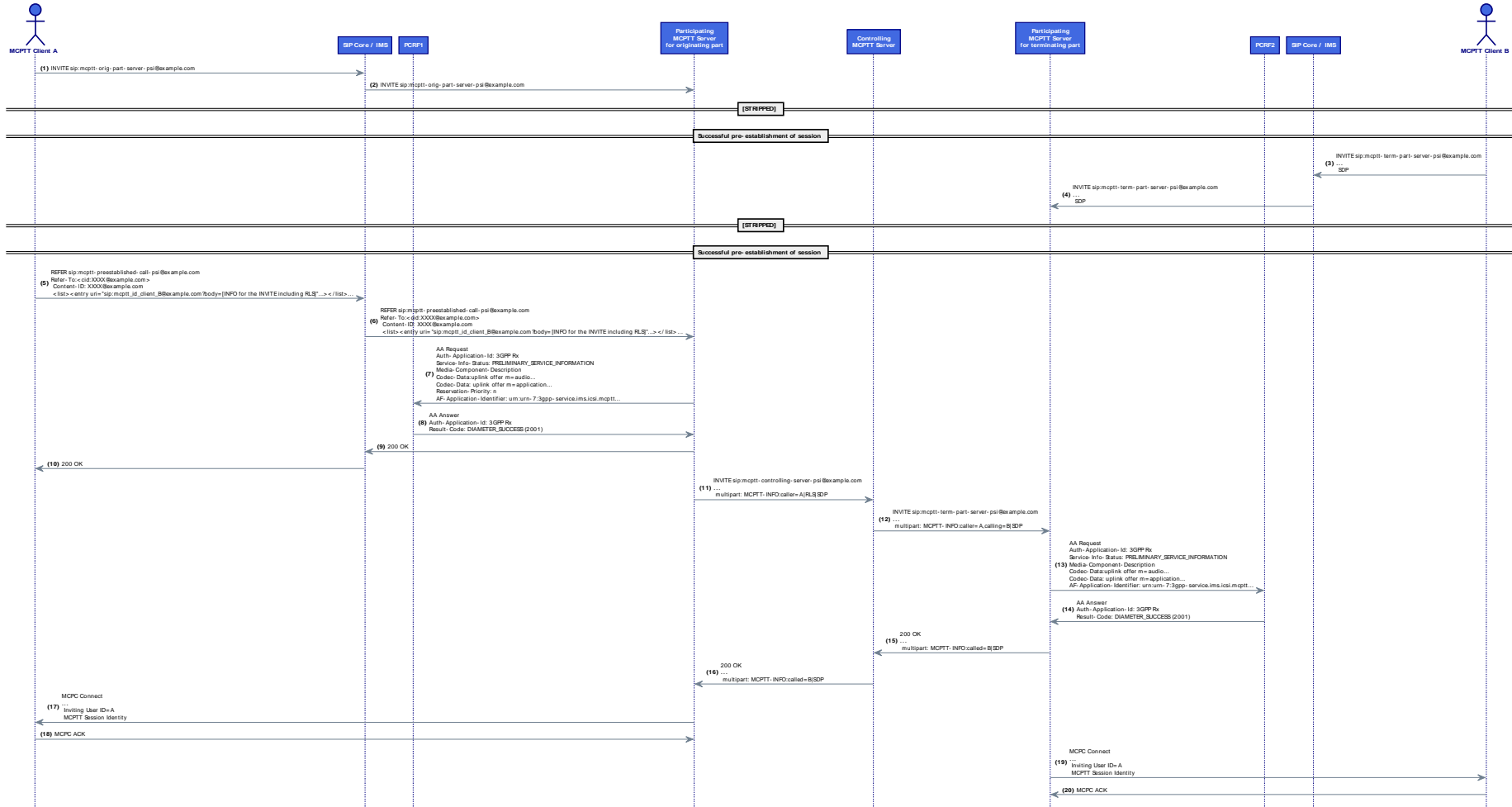


Figure 75: PCC/BEARERSETUP/04 (option b) Message Sequence

Table 84: PCC/BEARERSETUP/04 ITD

Interoperability Test Description			
<b>Identifier</b>	PCC/BEARERSETUP/04		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and IMS PCC mechanisms supporting MCPTT applications		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPTT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.8)</li> <li>• IMS_RX (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	The MCPTT clients of User 1 (mcptt_id_clientA@example.com) and User 2 (mcptt_id_clientB@example.com) pre-establish their respective session to the proper participating, procedure repeated for both ends
	2	check	Sessions pre-established
	3	stimulus	User 1 calls User 2 using pre-established session
	4	check	REFER is created and sent to the participating server of User 1
	5	check	The participating server creates the proper INVITE with the data embedded in the REFER and forwards it to the controlling
	6	check	The P-CSCF would be able to parse the REFER and signal via DIAMETER the QoS requirement to the PCRF
	7	check	The controlling server forwards the INVITE to the participating server of the callee and sends a 200 ok back to the participating of the caller
	8	check	The participating of the callee notifies him/her by sending an MCPC Connect message (reINVITE in manual or emergency/imminent peril calls)
	9	check	An MCPC Connect message is triggered by the originating participating servers
	10	verify	Call connected using the pre-established unicast MC bearers in both originating and terminating sides and media flows exchanged

## 7.6 eMBMS (EMBMS)

### 7.6.1 Void

## 7.6.2 Use of dynamically established MBMS bearers in prearranged MCPTT group calls with pre-allocated TMGIs [EMBMS/ACTIVATEBEARER/WPRETMGI/01]

In an on-going prearranged MCPTT group call the MCPTT Participating server uses the MB2-C interface to the BM-SC to allocate a TMGI using the GCS-Action-Request message and procedures described in clause 5.2.1 in ETSI TS 129 468 [23]. Later, it uses the allocated TMGI to request the activation of a MBMS bearer by using the GCS-Action-Request with the MBMS StartStop Indication AVP set to "START" as described in clause 5.3.2 in ETSI TS 129 468 [23]. Upon successful activation the MCPTT Participating may send the multicast data flow to the MB2-U endpoint (unicast IP and Port in the BM-SC).

Then, the Participating notifies client(s) using a SIP MESSAGE request as described in clause 14.2.2.2 in ETSI TS 124 379 [9] that a new MBMS bearer is available in the service area. This message includes the TMGI, the port of the general purpose subchannel and the multicast IP. When the client enters the MBMS service area and starts listening to the general purpose subchannel, it notifies the Participating server about this event with a SIP MESSAGE as described in clause 14.3.3 in ETSI TS 124 379 [9]. After receiving this message the Participating server can start sending Map-Group-To-Bearer messages to the BM-SC IP and port received in MB2-C procedures (MB2-U interface). These messages include the MCPTT group identity and the media/floor control subchannel ports. The BM-SC is in charge of delivering these messages to the MCPTT clients using the MBMS bearer. When the clients receive this information, they will send another SIP MESSAGE to notify that they are able to listen to audio and floor control subchannels through MBMS. When the Participating server receives this message, it will start sending RTP audio packets and floor control TAKEN and IDLE messages via MB2-U interface.

**NOTE:** In all eMBMS sequence diagrams the MCCP term is used for the MBMS signalling protocol. In newer versions (i.e. 14.2.1) of ETSI TS 124 380 [10] the term MCMC is used. However the old notation is kept in the present document to respect the alignment with the 14.1.0 version.

Message Sequence Diagram

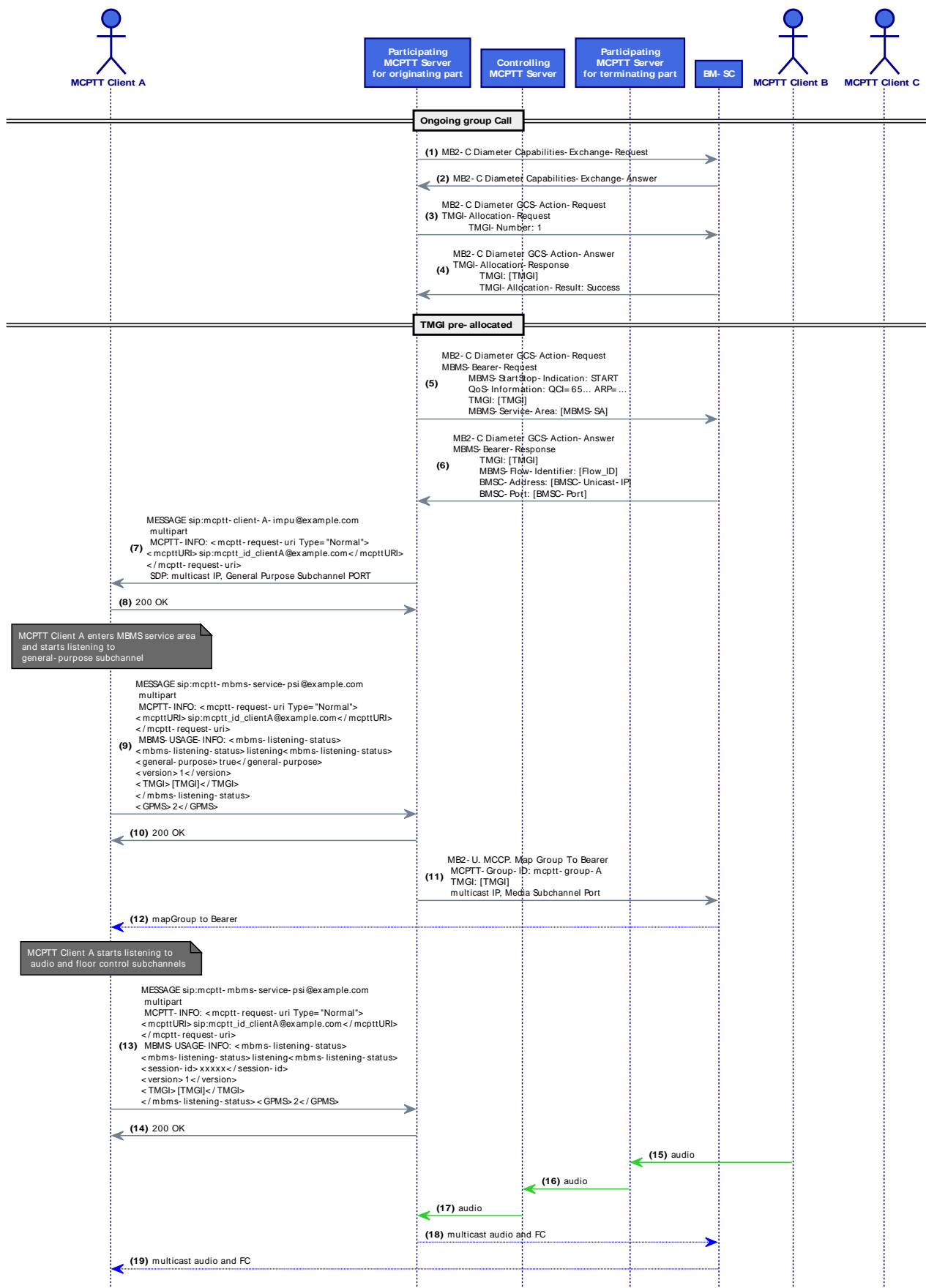


Figure 76: EMBMS/ACTIVATEBEARER/WPRETMGI/01 Message Sequence

## Message Details

[3] MB2-C GCS-Action-Request MCPTT Participating --> BM-SC

Origin-Host: mcptt-orig-part-server.example.com  
 Origin-Realm: example.com  
 Destination-Host: bm-sc.example.com  
 Destination-Realm: example.com  
 Auth-Application-Id: 3GPP MB2-C (16777335)  
 TMGI-Allocation-Request:  
   TMGI-Number: 1  
 Supported-Features:  
   Vendor-Id: 3GPP (10415)  
   Feature-List-ID: 1  
   Feature-List:  
     .....x - Heartbeat support  
     .....x - MBMS cell list support

[4] MB2-C GCS-Action-Answer BM-SC --> MCPTT Participating

Origin-Host: bm-sc.example.com  
 Origin-Realm: example.com  
 Auth-Application-Id: 3GPP MB2-C (16777335)  
 Result-Code: DIAMETER\_SUCCESS (2001)  
 TMGI-Allocation-Response:  
   TMGI: 864a1600f110  
     MBMS-Service-ID: 0x86a16  
     MCC: 001  
     MNC: 01  
   MBMS-Session-Duration: 070800  
     .... .000 0000 = Estimated session duration days: 0  
     0000 0001 0010 1100 0... .... = Estimated session duration seconds: 600  
 TMGI-Allocation-Result: 1  
   ...0 ... = Too many TMGIs requested: Not set  
   ... 0... = Unknown TMGI: Not set  
   ... .0.. = Resources exceeded: Not set  
   ... ..0. = Authorization rejected: Not set  
   ... ...1 = Success: Set  
 Supported-Features:  
   Vendor-Id: 3GPP (10415)  
   Feature-List-ID: 1  
   Feature-List:  
     .....x - Heartbeat support  
     .....x - MBMS cell list support

[5] MB2-C GCS-Action-Request MCPTT Participating --> BM-SC

Origin-Host: mcptt-orig-part-server.example.com  
 Origin-Realm: example.com  
 Destination-Host: bm-sc.example.com  
 Destination-Realm: example.com  
 Auth-Application-Id: 3GPP MB2-C (16777335)  
 MBMS-Bearer-Request:  
   MBMS-StartStop-Indication: START (0)  
   QoS-Information:  
     QoS-Class-Identifier: 65  
     Max-Requested-Bandwidth-DL: 41000  
     Guaranteed-Bitrate-DL: 41000  
     Allocation-Retention-Priority:  
       Priority-Level: 5  
       Pre-emption-Capability: PRE-EMPTION\_CAPABILITY\_ENABLED (0)  
       Pre-emption-Vulnerability: PRE-EMPTION\_VULNERABILITY\_ENABLED (0)  
   TMGI: 864a1600f110  
     MBMS-Service-ID: 0x86a16  
     MCC: 001  
     MNC: 01  
   MB2U-Security: 0  
   MBMS-Service-Area: 0230391ed2ad9c  
     Number of MBMS service area codes: 3  
     MBMS service area code: 12345  
     MBMS service area code: 7890  
     MBMS service area code: 44444  
 Supported-Features:  
   Vendor-Id: 3GPP (10415)  
   Feature-List-ID: 1  
   Feature-List:

.....x - Heartbeat support  
 .....x. - MBMS cell list support

[6] MB2-C GCS-Action-Answer BM-SC --> MCPTT Participating

Origin-Host: bm-sc.example.com  
 Origin-Realm: example.com  
 Auth-Application-Id: 3GPP MB2-C (16777335)  
 MBMS-Bearer-Response:  
   TMGI: 864a1600f110  
     MBMS-Service-ID: 0x86a16  
     MCC: 001  
     MNC: 01  
 MBMS-Flow-Identifier: 0001  
 MBMS-Session-Duration: 012c00  
 .... .. .000 0000 = Estimated session duration days: 0  
 0000 0001 0010 1100 0... .. = Estimated session duration seconds: 600  
 BMSC-Address: [BMSC-Unicast-IP]  
 BMSC-Port: [BMSC-Port]  
 Supported-Features:  
 Vendor-Id: 3GPP (10415)  
 Feature-List-ID: 1  
 Feature-List:  
 .....x - Heartbeat support  
 .....x. - MBMS cell list support

[7] MESSAGE MCPTT Participating --> MCPTT Client A

MESSAGE sip:mcptt-client-A-impu@example.com SIP/2.0  
 From: <sip:mcptt-mbms-service@example.com>;tag=[tag]  
 To: <sip:mcptt-client-A-impu@example.com>  
 Call-ID: [call\_id]  
 CSeq: [seq] MESSAGE  
 Accept-Contact: \*;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";require;explicit  
 Accept-Contact: \*;+g.3gpp.mcptt;require;explicit  
 Content-Type: multipart/mixed;boundary=[boundary]  
 P-Asserted-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt  
 P-Asserted-Identity: <sip:mcptt-mbms-service@example.com>

--[boundary]  
 Content-Type: application/vnd.3gpp.mcptt-info+xml

```
<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>
    </mcptt-request-uri>
  </mcptt-Params>
</mcpttinfo>
```

--[boundary]  
 Content-Type: application/sdp  
 Content-Disposition: render

v=0  
 o=MCPTT-SERVER 181160244 2621525762 IN IP4 [MULTICAST\_IP]  
 m=audio 9 RTP/AVP 99  
 i=speech  
 c=IN IP4 0.0.0.0  
 a=rtpmap:99 AMR-WB/16000/1  
 a=fmtp:99 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0  
 m=application [GPMS\_PORT] udp MCPTT  
 c=IN IP4 [MULTICAST\_IP]  
 m=application 9 udp MCPTT  
 c=IN IP4 0.0.0.0  
 ...

--[boundary]  
 Content-Type: application/vnd.3gpp.mcptt-mbms-usage-info+xml

```
<?xml version="1.0" encoding="UTF-8"?>
<mcptt-mbms-usage-info xmlns="urn:3gpp:ns:mcpttMbmsUsage:1.0">
  <announcement>
    <TMGI>864a1600f110</TMGI>
    <QCI>65</QCI>
    <mbms-service-areas>0230391ed2ad9c</mbms-service-areas>
```

```

</announcement>
<GPMS>2</GPMS>
</mcptt-mbms-usage-info>

```

```
--[boundary]--
```

```
[9] MESSAGE MCPTT Client A --> MCPTT Participating
```

```

MESSAGE sip:mcptt-mbms-service@example.com SIP/2.0
From: <sip:mcptt-client-A@example.com>;tag=[tag]
To: <sip:mcptt-mbms-service@example.com>
Call-ID: [call_id]
CSeq: [cseq] MESSAGE
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";require;explicit
P-Preferred-Identity: <sip:mcptt-client-A-impu@example.com>
Content-Type: multipart/mixed;boundary=[boundary]

```

```
--[boundary]
```

```
Content-Type: application/vnd.3gpp.mcptt-info+xml
```

```

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>
    </mcptt-request-uri>
  </mcptt-Params>
</mcpttinfo>

```

```
--[boundary]
```

```
Content-Type: application/vnd.3gpp.mcptt-mbms-usage-info+xml
```

```

<?xml version="1.0" encoding="UTF-8"?>
<mcptt-mbms-usage-info xmlns="urn:3gpp:ns:mcpttMbmsUsage:1.0">
  <mbms-listening-status>
    <mbms-listening-status>listening</mbms-listening-status>
    <general-purpose>true</general-purpose>
    <version>1</version>
    <TMGI>864a1600f110</TMGI>
  </mbms-listening-status>
  <GPMS>2</GPMS>
</mcptt-mbms-usage-info>
--[boundary]--

```

```
[11] MCCC Map Group To Bearer MCPTT Participating --> BM-SC
```

```

Map Group To Bearer
MCPTT Group Identity: sip:mcptt-group-A@example.com
Temporary Mobile Group Identity (TMGI): 864a1600f110
MBMS Subchannel: 13000000271200002711ef000001
  0001 .... = Audio m-line Number: 1
  .... 0011 = Floor m-line Number: 3
  0000 .... = IP Version: IP version 4 (0)
Floor Control Port: [FLOOR_CONTROL_SUBCHANNEL_PORT]
Media Port: [MEDIA_SUBCHANNEL_PORT]
IPv4 Address: [MULTICAST_IP]

```

```
[12] MESSAGE MCPTT Client A --> MCPTT Participating
```

```

MESSAGE sip:mcptt-mbms-service@example.com SIP/2.0
From: <sip:mcptt-client-A@example.com>;tag=[tag]
To: <sip:mcptt-mbms-service@example.com>
Call-ID: [call_id]
CSeq: [cseq] MESSAGE
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";require;explicit
P-Preferred-Identity: <sip:mcptt-client-A-impu@example.com>
Content-Type: multipart/mixed;boundary=[boundary]

```

```
--[boundary]
```

```
Content-Type: application/vnd.3gpp.mcptt-info+xml
```

```

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <mcptt-request-uri type="Normal">

```



```

    <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>
  </mcptt-request-uri>
</mcptt-Params>
</mcpttinfo>

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-mbms-usage-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcptt-mbms-usage-info xmlns="urn:3gpp:ns:mcpttMbmsUsage:1.0">
  <mbms-listening-status>
    <mbms-listening-status>listening</mbms-listening-status>
    <session-id>sip:session_id@mcptt-server.example.com</session-id>
    <version>1</version>
    <TMGI>864a1600f110</TMGI>
  </mbms-listening-status>
  <GPMS>2</GPMS>
</mcptt-mbms-usage-info>
--[boundary]--

```

## Interoperability Test Description

**Table 85: EMBMS/ACTIVATEBEARER/WPRETMGI/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	EMBMS/ACTIVATEBEARER/WPRETMGI/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, eMBMS signalling using SIP to the clients and MB2-C/U interfaces to the BM-SC		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>Diameter in MB2-C (see ETSI TS 129 468 [23])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC</li> <li>MCPTTClient_EMBMS (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS</li> <li>Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id - Ongoing prearranged group call</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	MCPTT Participating requests the allocation of a TMGI
	2	stimulus	Upon successful TMGI allocation MCPTT participating requests the activation of a MBMS bearer
	3	stimulus	Upon successful MBMS bearer activation MCPTT participating notifies users using SIP MESSAGE the general purpose subchannel port where the multicast signalling will be sent to
	4	stimulus	Users notify using SIP MESSAGE that they are listening to the general purpose subchannel
	5	stimulus	Participating uses Map Group To Bearer to start sending Floor Control/Audio packets over multicast
	6	check	Users successfully listening to multicast group call

### 7.6.3 Use of dynamically established MBMS bearers in prearranged MCPTT group calls without pre-allocated TMGIs [EMBMS/ACTIVATEBEARER/WOPRETMGI/01]

The procedure is equivalent to that in clause 7.6.2 but no TMGI is explicitly pre-allocated. Instead, the BM-SC will provide the TMGI (i.e. by previous signalling or preprovisioning) and no TMGI is signalled in the GCS-Action-Request message.

Message Sequence Diagram

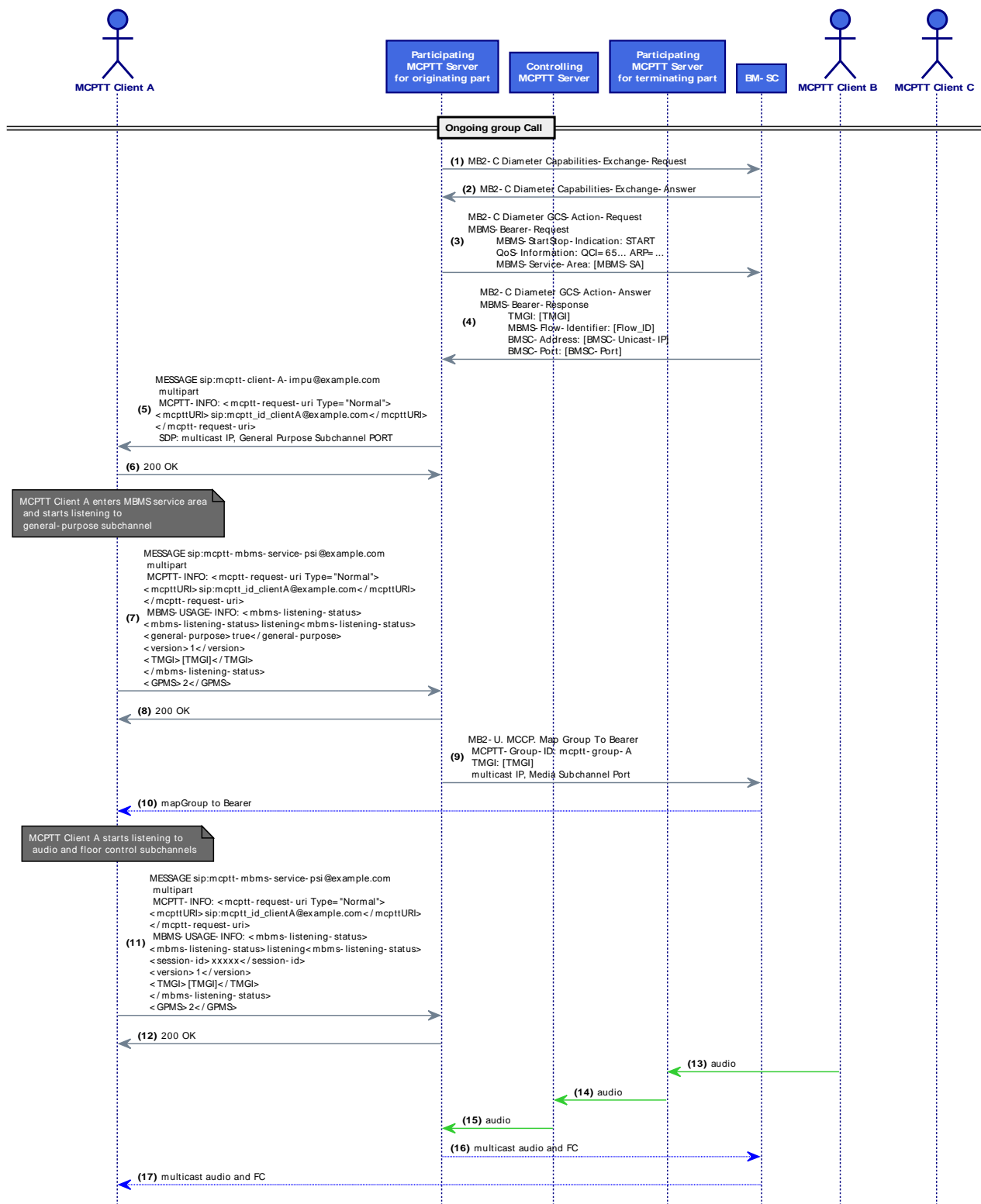


Figure 77: EMBMS/ACTIVATEBEARER/WOPRETMGI/01 Message Sequence

## Message Details

[3] MB2-C GCS-Action-Request MCPTT Participating --> BM-SC

```
Origin-Host: mcptt-orig-part-server.example.com
Origin-Realm: example.com
Destination-Host: bm-sc.example.com
Destination-Realm: example.com
Auth-Application-Id: 3GPP MB2-C (16777335)
MBMS-Bearer-Request:
  MBMS-StartStop-Indication: START (0)
  QoS-Information:
    QoS-Class-Identifier: 65
    Max-Requested-Bandwidth-DL: 41000
    Guaranteed-Bitrate-DL: 41000
    Allocation-Retention-Priority:
      Priority-Level: 5
      Pre-emption-Capability: PRE-EMPTION_CAPABILITY_ENABLED (0)
      Pre-emption-Vulnerability: PRE-EMPTION_VULNERABILITY_ENABLED (0)
  MB2U-Security: 0
  MBMS-Service-Area: 0230391ed2ad9c
    Number of MBMS service area codes: 3
    MBMS service area code: 12345
    MBMS service area code: 7890
    MBMS service area code: 44444
Supported-Features:
  Vendor-Id: 3GPP (10415)
  Feature-List-ID: 1
  Feature-List:
    .....x - Heartbeat support
    .....x. - MBMS cell list support
```

[4] MB2-C GCS-Action-Answer BM-SC --> MCPTT Participating

```
Origin-Host: bm-sc.example.com
Origin-Realm: example.com
Auth-Application-Id: 3GPP MB2-C (16777335)
MBMS-Bearer-Response:
  TMGI: 864a1600f110
  MBMS-Service-ID: 0x86a16
  MCC: 001
  MNC: 01
  MBMS-Flow-Identifier: 0001
  MBMS-Session-Duration: 012c00
  .... .. .000 0000 = Estimated session duration days: 0
  0000 0001 0010 1100 0... .. = Estimated session duration seconds: 600
  BMSC-Address: [BMSC-Unicast-IP]
  BMSC-Port: [BMSC-Port]
Supported-Features:
  Vendor-Id: 3GPP (10415)
  Feature-List-ID: 1
  Feature-List:
    .....x - Heartbeat support
    .....x. - MBMS cell list support
```

## Interoperability Test Description

**Table 86: EMBMS/ACTIVATEBEARER/WOPRETMGI/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	EMBMS/ACTIVATEBEARER/WOPRETMGI/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, eMBMS signalling using SIP to the clients and MB2-C/U interfaces to the BM-SC		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>Diameter in MB2-C (see ETSI TS 129 468 [23])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC</li> <li>MCPTTClient_EMBMS (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS</li> <li>Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id Ongoing prearranged group call</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	MCPTT Participating requests the activation of a MBMS bearer with no TMGI
	2	stimulus	Upon successful MBMS bearer activation MCPTT participating notifies users using SIP MESSAGE the general purpose subchannel port where the multicast signalling will be sent to
	3	stimulus	Users notify using SIP MESSAGE that they are listening to the general purpose subchannel
	4	stimulus	Participating uses Map Group To Bearer to start sending Floor Control/Audio packets over multicast
	5	check	Users successfully listening to multicast group call

#### 7.6.4 Use of pre-established MBMS bearers in prearranged group calls with pre-allocated TMGIs [EMBMS/PREBEARER/WPRETMGI/01]

This test case is equivalent to that in clause 7.6.2 but all the MBMS bearer activation and signalling procedures is carried out before the Group Call setup is carried out (instead of dynamic EMBMS bearer activation on an ongoing group call).

Following high level description in Stage 2 ETSI TS 123 379 [4], clauses 10.10.2 and 10.10.4.2.1, and more specifically, the flow diagram in figure 10.10.2.2-1, the Activation and Announcement of the EMBMS bearer would be prior to the Call Setup procedure. Then, the Map Group To Bearer messages will notify EMBMS users about the new session.

Message Sequence Diagram

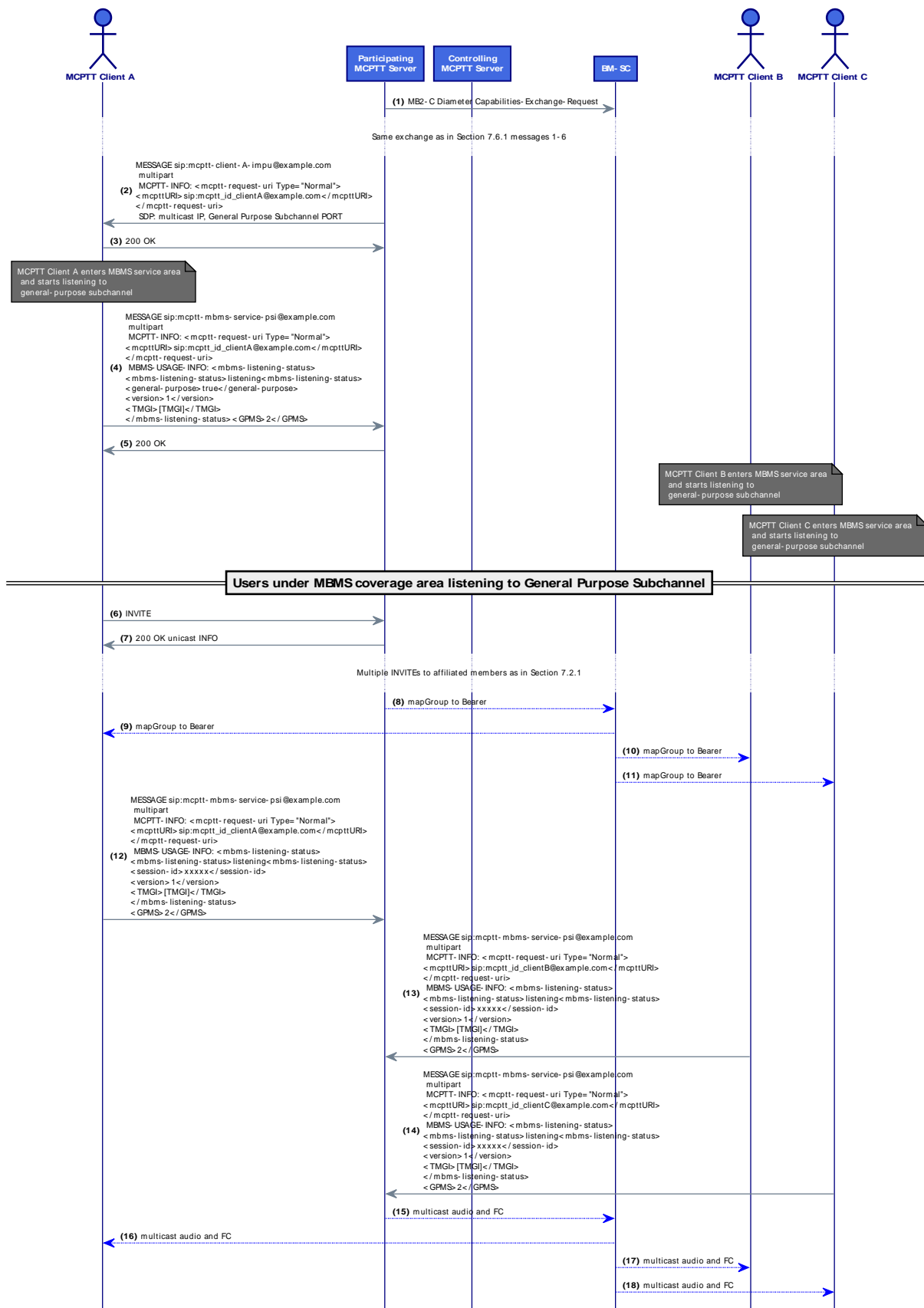


Figure 78: EMBMS/PREBEARER/WPRETMGI/01 Message Sequence

## Message Details

[2] MESSAGE MCPTT Participating --> MCPTT Client A

```

MESSAGE sip:mcptt-client-A-impu@example.com SIP/2.0
From: <sip:mcptt-mbms-service@example.com>;tag=[tag]
To: <sip:mcptt-client-A-impu@example.com>
Call-ID: [call_id]
CSeq: [seq] MESSAGE
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";require;explicit
Accept-Contact: *;+g.3gpp.mcptt;require;explicit
Content-Type: multipart/mixed;boundary=[boundary]
P-Asserted-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Asserted-Identity: <sip:mcptt-mbms-service@example.com>

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>
    </mcptt-request-uri>
  </mcptt-Params>
</mcpttinfo>

--[boundary]
Content-Type: application/sdp
Content-Disposition: render

v=0
o=MCPTT-SERVER 181160244 2621525762 IN IP4 [MULTICAST_IP]
m=audio 9 RTP/AVP 99
i=speech
c=IN IP4 0.0.0.0
a=rtpmap:99 AMR-WB/16000/1
a=fmtp:99 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
m=application [GPMS_PORT] udp MCPTT
c=IN IP4 [MULTICAST_IP]
m=application 9 udp MCPTT
c=IN IP4 0.0.0.0
...
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-mbms-usage-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcptt-mbms-usage-info xmlns="urn:3gpp:ns:mcpttMbmsUsage:1.0">
  <announcement>
    <TMGI>864a1600f110</TMGI>
    <QCI>65</QCI>
    <mbms-service-areas>0230391ed2ad9c</mbms-service-areas>
  </announcement>
  <GPMS>2</GPMS>
</mcptt-mbms-usage-info>

--[boundary]--

```

[4] MESSAGE MCPTT Client A --> MCPTT Participating

```

MESSAGE sip:mcptt-mbms-service@example.com SIP/2.0
From: <sip:mcptt-client-A@example.com>;tag=[tag]
To: <sip:mcptt-mbms-service@example.com>
Call-ID: [call_id]
CSeq: [cseq] MESSAGE
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";require;explicit
P-Preferred-Identity: <sip:mcptt-client-A-impu@example.com>
Content-Type: multipart/mixed;boundary=[boundary]

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>

```

```

    </mcptt-request-uri>
  </mcptt-Params>
</mcpttinfo>

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-mbms-usage-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcptt-mbms-usage-info xmlns="urn:3gpp:ns:mcpttMbmsUsage:1.0">
  <mbms-listening-status>
    <mbms-listening-status>listening</mbms-listening-status>
    <general-purpose>true</general-purpose>
    <version>1</version>
    <TMGI>864a1600f110</TMGI>
  </mbms-listening-status>
  <GPMS>2</GPMS>
</mcptt-mbms-usage-info>
--[boundary]--

[8] MESSAGE MCPTT Client A --> MCPTT Participating

MESSAGE sip:mcptt-mbms-service@example.com SIP/2.0
From: <sip:mcptt-client-A@example.com>;tag=[tag]
To: <sip:mcptt-mbms-service@example.com>
Call-ID: [call_id]
CSeq: [cseq] MESSAGE
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";require;explicit
P-Preferred-Identity: <sip:mcptt-client-A-impu@example.com>
Content-Type: multipart/mixed;boundary=[boundary]

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>
    </mcptt-request-uri>
  </mcptt-Params>
</mcpttinfo>

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-mbms-usage-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcptt-mbms-usage-info xmlns="urn:3gpp:ns:mcpttMbmsUsage:1.0">
  <mbms-listening-status>
    <mbms-listening-status>listening</mbms-listening-status>
    <session-id>sip:session_id@mcptt-server.example.com</session-id>
    <version>1</version>
    <TMGI>864a1600f110</TMGI>
  </mbms-listening-status>
  <GPMS>2</GPMS>
</mcptt-mbms-usage-info>
--[boundary]--

```



## Interoperability Test Description

**Table 87: EMBMS/PREBEARER/WPRETMGI/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	EMBMS/PREBEARER/WPRETMGI/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, eMBMS signalling using SIP to the clients and MB2-C/U interfaces to the BM-SC		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• Diameter in MB2-C (see ETSI TS 129 468 [23])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC</li> <li>• MCPTTClient_EMBMS (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	MCPTT Participating requests the allocation of a TMGI and activation of MBMS bearer following procedures in clause 7.6.2
	2	stimulus	Users notify the participating about their status (listening to general purpose subchannel) using SIP MESSAGE
	3	stimulus	Users notify using SIP MESSAGE that they are listening to the general purpose subchannel
	4	stimulus	User initiates the Group Call using traditional SIP signalling
	5	stimulus	Participating uses Map Group To Bearer to all participants
	6	stimulus	Upon reception of proper listening to the new MBMS bearer and MCPTT participating starts sending audio/FC over MBMS
	7	check	Users successfully listening to multicast group call

### 7.6.5 Use of pre-established MBMS bearers in prearranged group calls without pre-allocated TMGIs [EMBMS/PREBEARER/WOPRETMGI/01]

This test case is equivalent to that in clause 7.6.3 but all the MBMS bearer activation and signalling procedures is carried out before the Group Call setup is carried out (instead of dynamic EMBMS bearer activation on an ongoing group call).

Following high level description in Stage 2 ETSI TS 123 379 [4], clauses 10.10.2 and 10.10.4.2.1, and the flow diagram in figure 10.7.3.1.2-1 in ETSI TS 123 280 [2], the Activation and Announcement of the EMBMS bearer would be prior to the Call Setup procedure.

Message Sequence Diagram

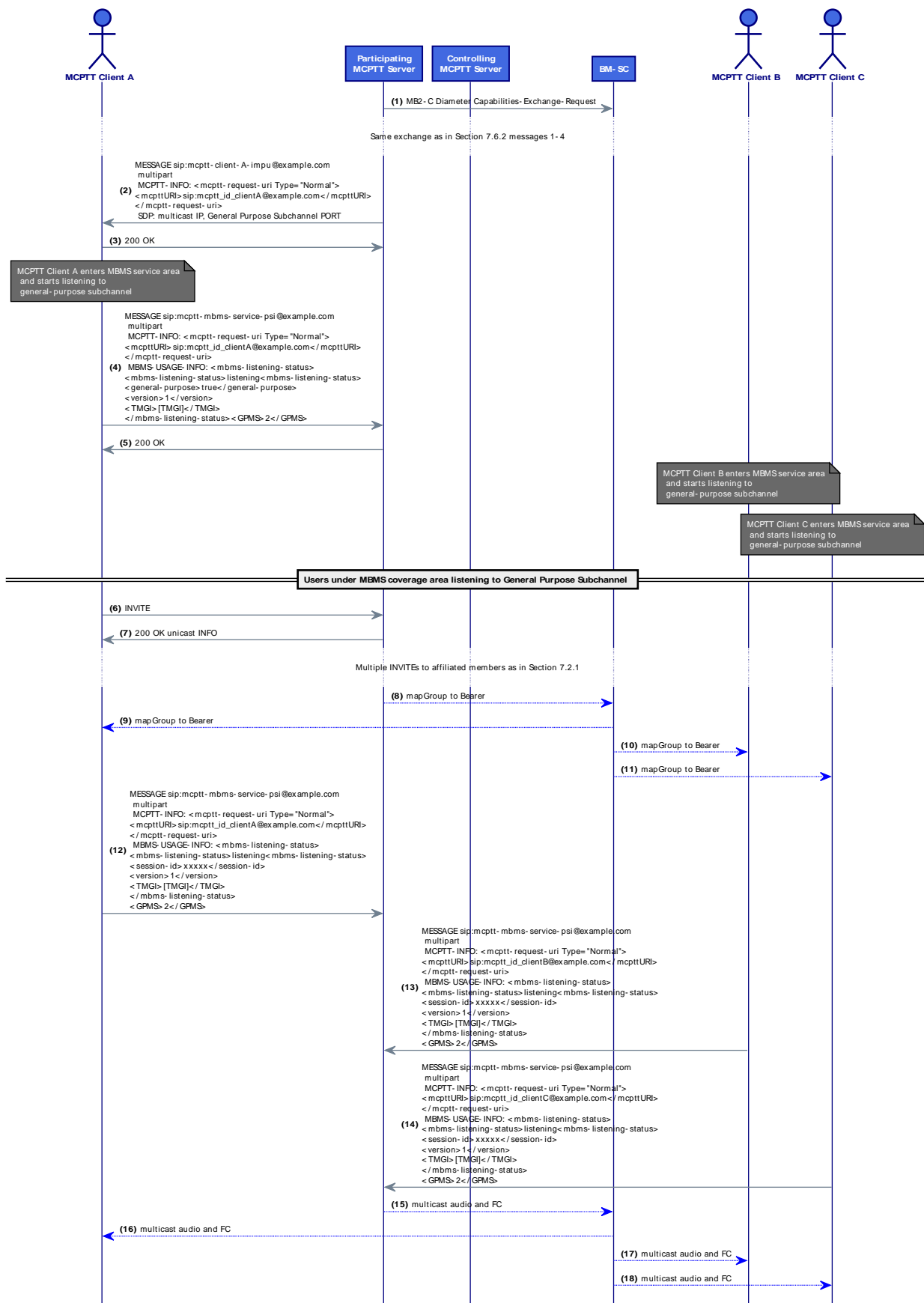


Figure 79: EMBMS/PREBEARER/WOPRETMGI/01 Message Sequence

## Message Details

[2] MESSAGE MCPTT Participating --> MCPTT Client A

```

MESSAGE sip:mcptt-client-A-impu@example.com SIP/2.0
From: <sip:mcptt-mbms-service@example.com>;tag=[tag]
To: <sip:mcptt-client-A-impu@example.com>
Call-ID: [call_id]
CSeq: [seq] MESSAGE
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";require;explicit
Accept-Contact: *;+g.3gpp.mcptt;require;explicit
Content-Type: multipart/mixed;boundary=[boundary]
P-Asserted-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Asserted-Identity: <sip:mcptt-mbms-service@example.com>

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>
    </mcptt-request-uri>
  </mcptt-Params>
</mcpttinfo>

--[boundary]
Content-Type: application/sdp
Content-Disposition: render

v=0
o=MCPTT-SERVER 181160244 2621525762 IN IP4 [MULTICAST_IP]
m=audio 9 RTP/AVP 99
i=speech
c=IN IP4 0.0.0.0
a=rtpmap:99 AMR-WB/16000/1
a=fmtp:99 mode-change-period=1; mode-change-capability=2; mode-change-neighbor=0; max-red=0
m=application [GPMS_PORT] udp MCPTT
c=IN IP4 [MULTICAST_IP]
m=application 9 udp MCPTT
c=IN IP4 0.0.0.0
...
--[boundary]
Content-Type: application/vnd.3gpp.mcptt-mbms-usage-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcptt-mbms-usage-info xmlns="urn:3gpp:ns:mcpttMbmsUsage:1.0">
  <announcement>
    <TMGI>864a1600f110</TMGI>
    <QCI>65</QCI>
    <mbms-service-areas>0230391ed2ad9c</mbms-service-areas>
  </announcement>
  <GPMS>2</GPMS>
</mcptt-mbms-usage-info>

--[boundary]--

```

[4] MESSAGE MCPTT Client A --> MCPTT Participating

```

MESSAGE sip:mcptt-mbms-service@example.com SIP/2.0
From: <sip:mcptt-client-A@example.com>;tag=[tag]
To: <sip:mcptt-mbms-service@example.com>
Call-ID: [call_id]
CSeq: [cseq] MESSAGE
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";require;explicit
P-Preferred-Identity: <sip:mcptt-client-A-impu@example.com>
Content-Type: multipart/mixed;boundary=[boundary]

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>
    </mcptt-request-uri>
  </mcptt-Params>
</mcpttinfo>

```

```

    </mcptt-request-uri>
  </mcptt-Params>
</mcpttinfo>

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-mbms-usage-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcptt-mbms-usage-info xmlns="urn:3gpp:ns:mcpttMbmsUsage:1.0">
  <mbms-listening-status>
    <mbms-listening-status>listening</mbms-listening-status>
    <general-purpose>true</general-purpose>
    <version>1</version>
    <TMGI>864a1600f110</TMGI>
  </mbms-listening-status>
  <GPMS>2</GPMS>
</mcptt-mbms-usage-info>
--[boundary]--

[8] MESSAGE MCPTT Client A --> MCPTT Participating

MESSAGE sip:mcptt-mbms-service@example.com SIP/2.0
From: <sip:mcptt-client-A@example.com>;tag=[tag]
To: <sip:mcptt-mbms-service@example.com>
Call-ID: [call_id]
CSeq: [cseq] MESSAGE
Accept-Contact: *;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mcptt";require;explicit
P-Preferred-Identity: <sip:mcptt-client-A-impu@example.com>
Content-Type: multipart/mixed;boundary=[boundary]

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>
    </mcptt-request-uri>
  </mcptt-Params>
</mcpttinfo>

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-mbms-usage-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcptt-mbms-usage-info xmlns="urn:3gpp:ns:mcpttMbmsUsage:1.0">
  <mbms-listening-status>
    <mbms-listening-status>listening</mbms-listening-status>
    <session-id>sip:session_id@mcptt-server.example.com</session-id>
    <version>1</version>
    <TMGI>864a1600f110</TMGI>
  </mbms-listening-status>
  <GPMS>2</GPMS>
</mcptt-mbms-usage-info>
--[boundary]--

```

## Interoperability Test Description

Table 88: EMBMS/PREBEARER/WOPRETMGI/01 ITD

Interoperability Test Description			
<b>Identifier</b>	EMBMS/PREBEARER/WOPRETMGI/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, eMBMS signalling using SIP to the clients and MB2-C/U interfaces to the BM-SC		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPTT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>Diameter in MB2-C (see ETSI TS 129 468 [23])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC</li> <li>MCPTTClient_EMBMS (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS</li> <li>Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	MCPTT Participating requests the activation of MBMS bearer following procedures in clause 7.6.3
	2	stimulus	Users notify the participating about their status (listening to general purpose subchannel) using SIP MESSAGE
	3	stimulus	Users notify using SIP MESSAGE that they are listening to the general purpose subchannel
	4	stimulus	User initiates the Group Call using traditional SIP signalling
	5	stimulus	Participating uses Map Group To Bearer to all participants
	6	stimulus	Upon reception of proper listening to the new MBMS bearer and MCPTT participating starts sending audio/FC over MBMS
	7	check	Users successfully listening to multicast group call

## 7.6.6 Modification of MBMS bearers upon reception of emergency upgrade request [EMBMS/MODIFYBEARER/01]

This test covers the upgrade to emergency state of an on-going prearranged MCPTT group call. The MCPTT Participating server uses the MB2-C interface to the BM-SC to update a previously activated eMBMS bearer, which was set following any of the procedures described in clauses 7.6.2, 7.6.3, 7.6.4 or 7.6.5 of the present document. The MCPTT Participating server will send a GCS-Action-Request with the MBMS-StartStop-Indication AVP set to "UPDATE" value as described in clause 5.3.4 in ETSI TS 129 468 [23]. In the reINVITE request the MCPTT Client includes a new Resource-Priority header set to a high priority value, which corresponds with the emergency state. The MCPTT Participating server shall set the Allocation-Retention-Priority AVP of the MBMS-Bearer-Request accordingly.

Message Sequence Diagram

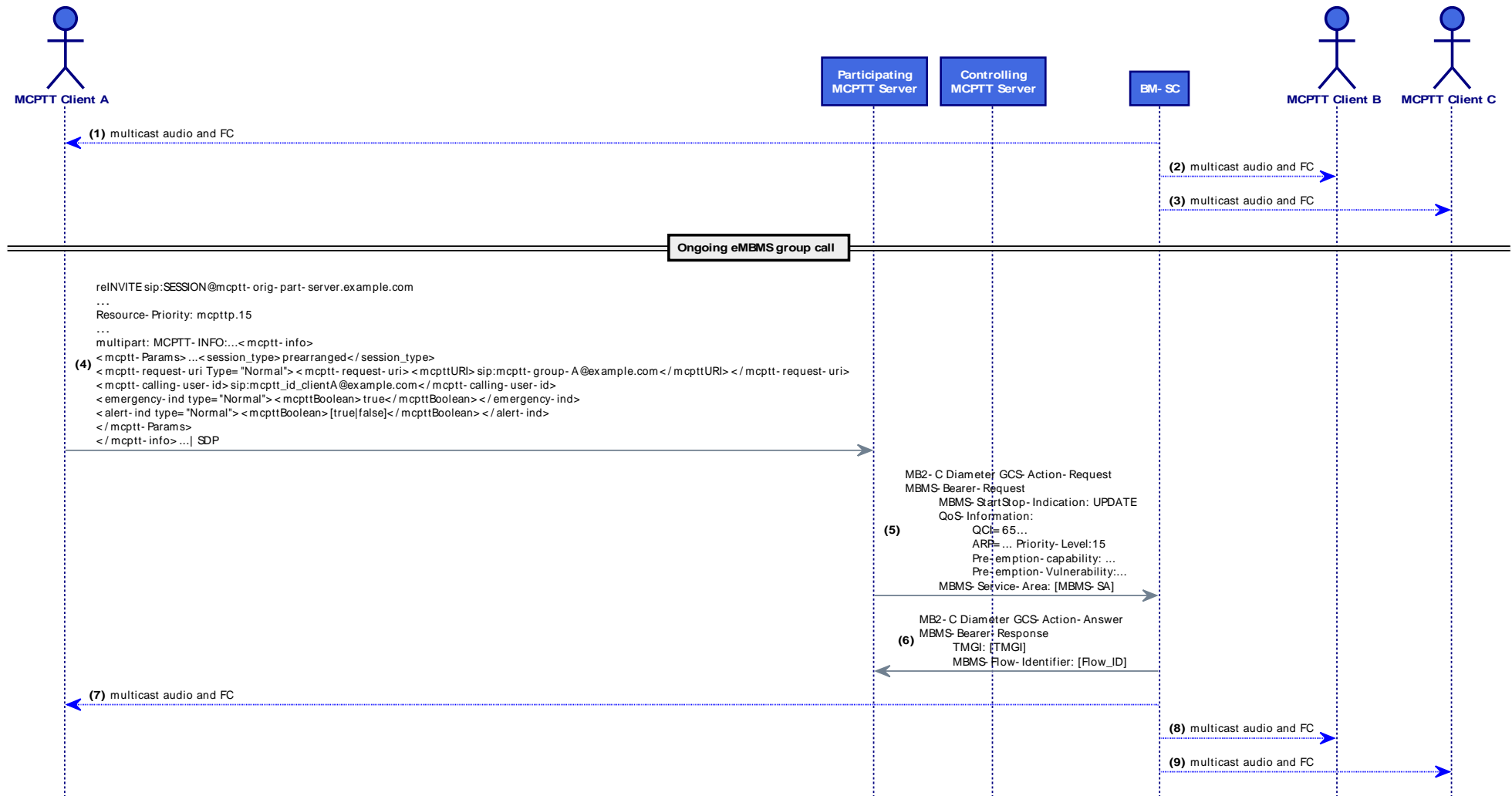


Figure 80: EMBMS/MODIFYBEARER/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 89: EMBMS/MODIFYBEARER/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	EMBMS/MODIFYBEARER/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, eMBMS signalling using SIP to the clients and MB2-C/U interfaces to the BM-SC to update an existing MBMS bearer		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>Diameter in MB2-C (see ETSI TS 129 468 [23])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC</li> <li>MCPTTClient_EMBMS (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS</li> <li>Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> <li>Ongoing group call and MBMS bearer established</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	MCPTT User reINVITEs to notify the new emergency call condition using proper <emergency-ind>
	2	stimulus	Participating sends a GCS-Action-Request to the BM-SC to UPDATE the bearer
	3	stimulus	BM-SC modifies the bearer according and sends a response back
	4	check	MBMS bearer updated with emergency associated QoS Information

### 7.6.7 Deactivation of MBMS bearers after termination of a prearranged MCPTT group call with TMGI deallocation [EMBMS/DEACTBEARER/WTMGIDEA/01]

When the Participating MCPTT server receives a BYE request for the last user left in an on-going prearranged MCPTT group session which uses eMBMS, it shall first send an Unmap Group to Bearer request over MB2-U channel. If configured to do so, the Participating MCPTT server shall also deactivate the eMBMS bearer and the TMGI which was allocated for the eMBMS activation. This test case comprises the deactivation of an eMBMS bearer after the termination of a MCPTT session and also the deallocation of the TMGI.

The Participating MCPTT server shall deactivate the eMBMS bearer by sending a GCS-ActionRequest with the MBMS-StartStop-Indication AVP set to "STOP" value as described in clause 5.3.3 in ETSI TS 129 468 [23]. After deactivating the eMBMS bearer, the Participating MCPTT server shall also deallocate the TMGI which was allocated for the MCPTT session. The Participating MCPTT server will follow the procedures described in clause 5.2.2 of ETSI TS 129 468 [23]. It shall send another GCS-Action-Request with a TMGI-Deallocation-Request AVP, which includes the TMGI to be deallocated.

Message Sequence Diagram

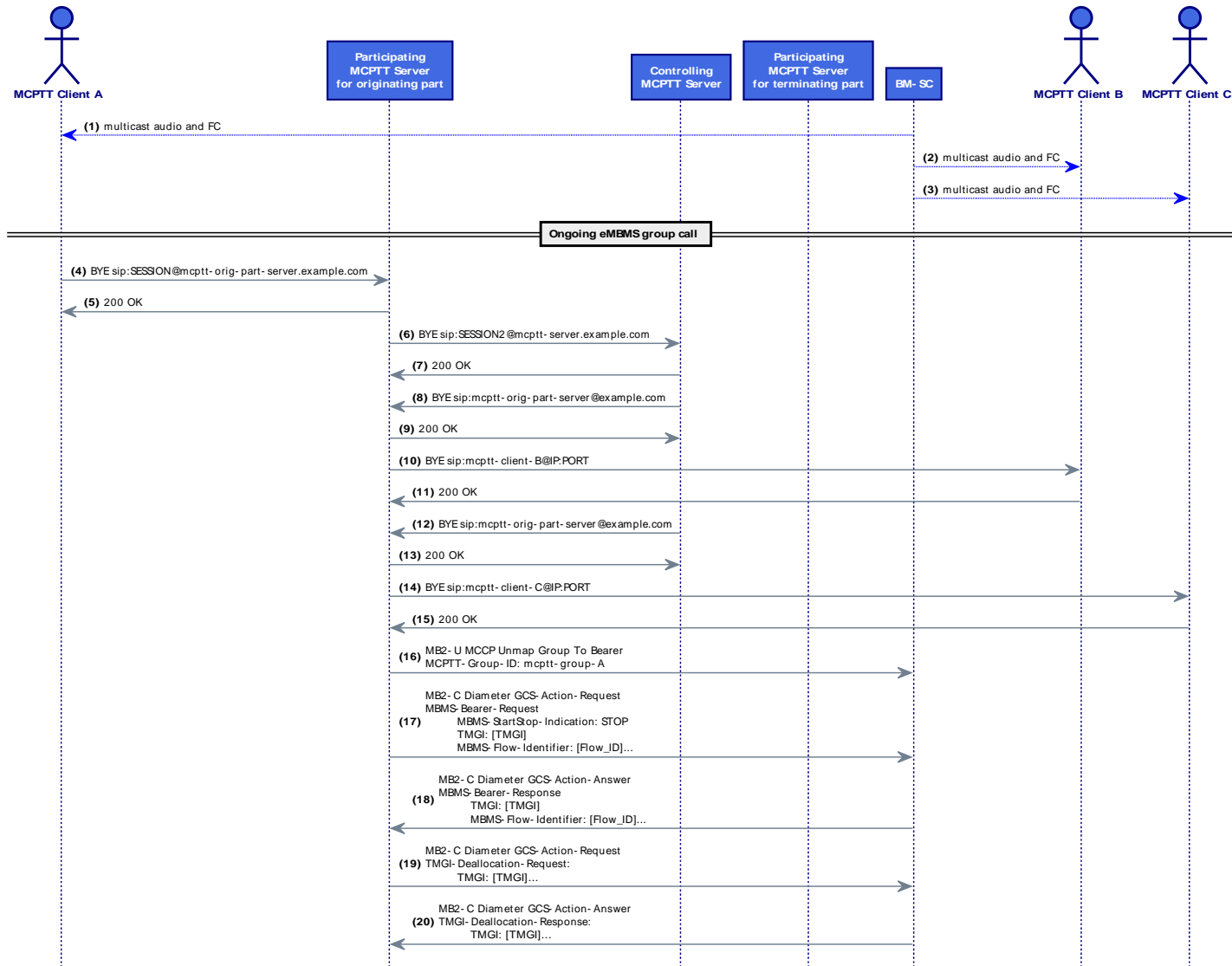


Figure 81: EMBMS/DEACTBEARER/WTMGIDEA/01 Message Sequence



## Message Details

[13] MCCP Unmap Group To Bearer MCPTT Participating --> BM-SC

Unmap Group To Bearer  
MCPTT Group Identity: sip:mcptt-group-A@example.com

[14] MB2-C GCS-Action-Request MCPTT Participating --> BM-SC

Origin-Host: mcptt-orig-part-server.example.com  
Origin-Realm: example.com  
Destination-Host: bm-sc.example.com  
Destination-Realm: example.com  
Auth-Application-Id: 3GPP MB2-C (16777335)  
MBMS-Bearer-Request:  
  MBMS-StartStop-Indication: STOP (1)  
  TMGI: 864a1600f110  
    MBMS-Service-ID: 0x86a16  
    MCC: 001  
    MNC: 01  
  MBMS-Flow-Identifier: 0001  
Supported-Features:  
  Vendor-Id: 3GPP (10415)  
  Feature-List-ID: 1  
  Feature-List:  
    .....x - Heartbeat support  
    .....x - MBMS cell list support

[15] MB2-C GCS-Action-Answer BM-SC --> MCPTT Participating

Origin-Host: bm-sc.example.com  
Origin-Realm: example.com  
Auth-Application-Id: 3GPP MB2-C (16777335)  
MBMS-Bearer-Response:  
  TMGI: 864a1600f110  
    MBMS-Service-ID: 0x86a16  
    MCC: 001  
    MNC: 01  
  MBMS-Flow-Identifier: 0001  
  MBMS-Bearer-Result: 0x00000001 (Success)  
Supported-Features:  
  Vendor-Id: 3GPP (10415)  
  Feature-List-ID: 1  
  Feature-List:  
    .....x - Heartbeat support  
    .....x - MBMS cell list support

[16] MB2-C GCS-Action-Request MCPTT Participating --> BM-SC

Origin-Host: mcptt-orig-part-server.example.com  
Origin-Realm: example.com  
Destination-Host: bm-sc.example.com  
Destination-Realm: example.com  
Auth-Application-Id: 3GPP MB2-C (16777335)  
TMGI-Deallocation-Request:  
  TMGI: 864a1600f110  
    MBMS-Service-ID: 0x86a16  
    MCC: 001  
    MNC: 01  
Supported-Features:  
  Vendor-Id: 3GPP (10415)  
  Feature-List-ID: 1  
  Feature-List:  
    .....x - Heartbeat support  
    .....x - MBMS cell list support

[17] MB2-C GCS-Action-Answer BM-SC --> MCPTT Participating

Origin-Host: bm-sc.example.com  
Origin-Realm: example.com  
Auth-Application-Id: 3GPP MB2-C (16777335)  
TMGI-Deallocation-Response:  
  TMGI: 864a1600f110  
    MBMS-Service-ID: 0x86a16

MCC: 001  
MNC: 01  
Supported-Features:  
Vendor-Id: 3GPP (10415)  
Feature-List-ID: 1  
Feature-List:  
.....x - Heartbeat support  
.....x. - MBMS cell list support

## Interoperability Test Description

**Table 90: EMBMS/DEACTBEARER/WTMGIDEA/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	EMBMS/DEACTBEARER/WTMGIDEA/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, eMBMS signalling using SIP to the clients and MB2-C/U interfaces to the BM-SC to deactivate a MBMS bearer		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• Diameter in MB2-C (see ETSI TS 129 468 [23])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC</li> <li>• MCPTTClient_EMBMS (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> <li>• Ongoing group call and MBMS bearer established</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	Participating receives the BYE from the last user therefore group call is terminated
	2	stimulus	Participating sends an Unmap Group to Bearer request over MB2-U channel
	3	stimulus	Participating sends a GCS-Action-Request with the MBMS-StartStop-Indication AVP set to "STOP"
	4	stimulus	Participating request the deallocation of the associated TMGI
	5	check	MBMS bearer and TMGI deactivated/deallocated

## 7.6.8 Deactivation of MBMS bearers after termination of a prearranged MCPTT group call without TMGI deallocation [EMBMS/DEACTBEARER/WOTMGIDEA/01]

The procedure is equivalent to that in clause 7.6.7 but no TMGI is deallocated after MCPTT session termination.

### Message Sequence Diagram

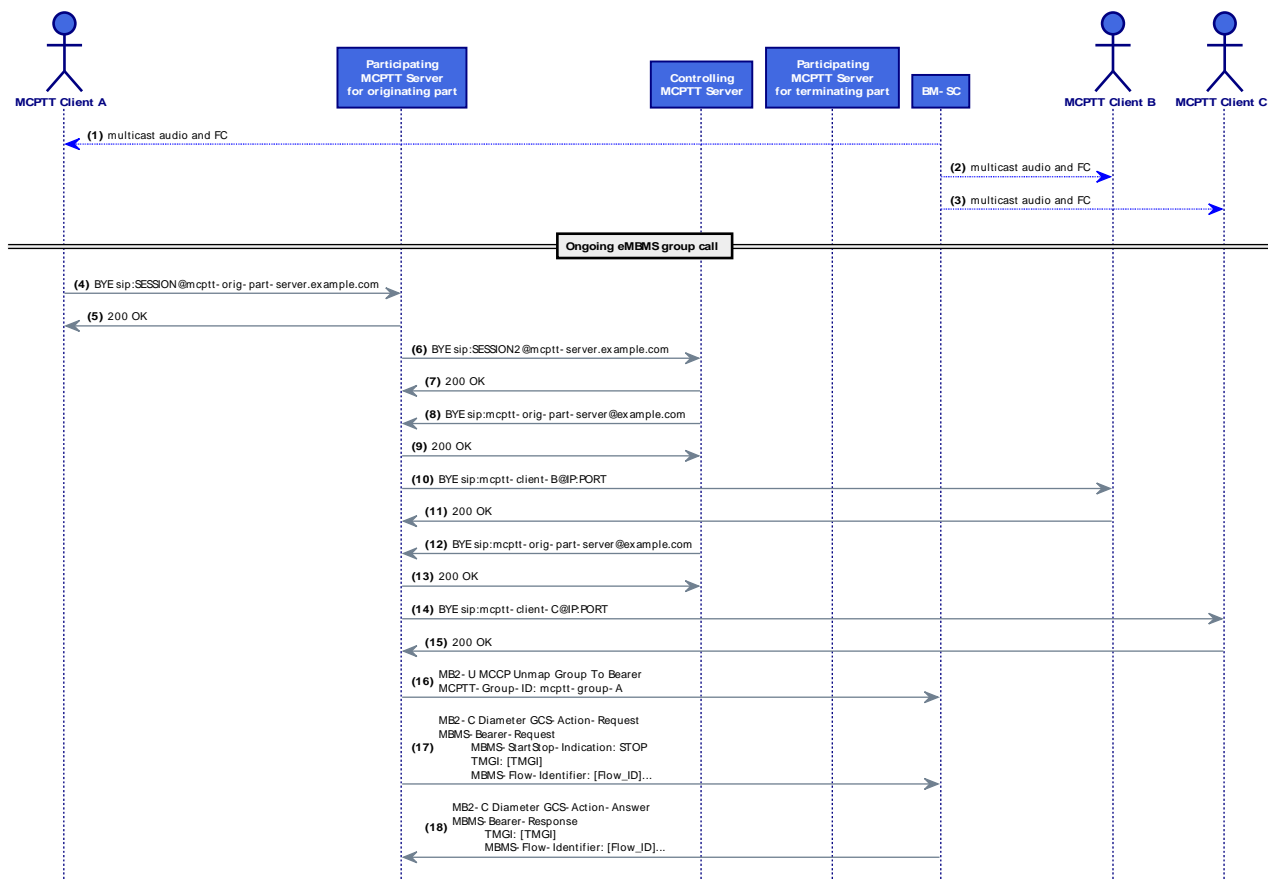


Figure 82: EMBMS/DEACTBEARER/WOTMGIDEA/01 Message Sequence

### Message Details

[13] MCCC Unmap Group To Bearer MCPTT Participating --> BM-SC

Unmap Group To Bearer  
MCPTT Group Identity: sip:mcptt-group-A@example.com

[14] MB2-C GCS-Action-Request MCPTT Participating --> BM-SC

```
Origin-Host: mcptt-orig-part-server.example.com
Origin-Realm: example.com
Destination-Host: bm-sc.example.com
Destination-Realm: example.com
Auth-Application-Id: 3GPP MB2-C (16777335)
MBMS-Bearer-Request:
  MBMS-StartStop-Indication: STOP (1)
  TMGI: 864a1600f110
  MBMS-Service-ID: 0x86a16
  MCC: 001
  MNC: 01
  MBMS-Flow-Identifier: 0001
Supported-Features:
  Vendor-Id: 3GPP (10415)
  Feature-List-ID: 1
  Feature-List:
```

.....x - Heartbeat support  
 .....x. - MBMS cell list support

[15] MB2-C GCS-Action-Answer BM-SC --> MCPTT Participating

Origin-Host: bm-sc.example.com  
 Origin-Realm: example.com  
 Auth-Application-Id: 3GPP MB2-C (16777335)  
 MBMS-Bearer-Response:  
   TMGI: 864a1600f110  
   MBMS-Service-ID: 0x86a16  
   MCC: 001  
   MNC: 01  
   MBMS-Flow-Identifier: 0001  
   MBMS-Bearer-Result: 0x00000001 (Success)  
 Supported-Features:  
   Vendor-Id: 3GPP (10415)  
   Feature-List-ID: 1  
   Feature-List:  
     .....x - Heartbeat support  
     .....x. - MBMS cell list support

## Interoperability Test Description

**Table 91: EMBMS/DEACTBEARER/WOTMGIDEA/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	EMBMS/DEACTBEARER/WOTMGIDEA/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, eMBMS signalling using SIP to the clients and MB2-C/U interfaces to the BM-SC to deactivate a MBMS bearer		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>Diameter in MB2-C (see ETSI TS 129 468 [23])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC</li> <li>MCPTTClient_EMBMS (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS</li> <li>Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> <li>Ongoing group call and MBMS bearer established</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	Participating receives the BYE from the last user therefore group call is terminated
	2	stimulus	Participating sends an Unmap Group to Bearer request over MB2-U channel
	3	stimulus	Participating sends a GCS-Action-Request with the MBMS-StartStop-Indication AVP set to "STOP"
	4	check	MBMS bearer deactivated

### 7.6.9 Switching to unicast bearer after TMGI expiration [EMBMS/SWITCHTOUNITMGIEXP/01]

If a TMGI expires during an on-going MCPTT session which uses eMBMS bearers, the BM-SC shall notify the MCPTT server that the MBMS is no longer available, so that the MCPTT server can continue with the MCPTT session but sending the media over unicast bearers. The BM-SC will send a GCS-Notification-Request which includes a TMGI-Expiry AVP and a MBMS-BearerEvent AVP with the Bearer Terminated bit set within a MBMS-Bearer-Event-Notification AVP in accordance with the procedures described in clause 5.2.3 in ETSI TS 129 468 [23].

Message Sequence Diagram

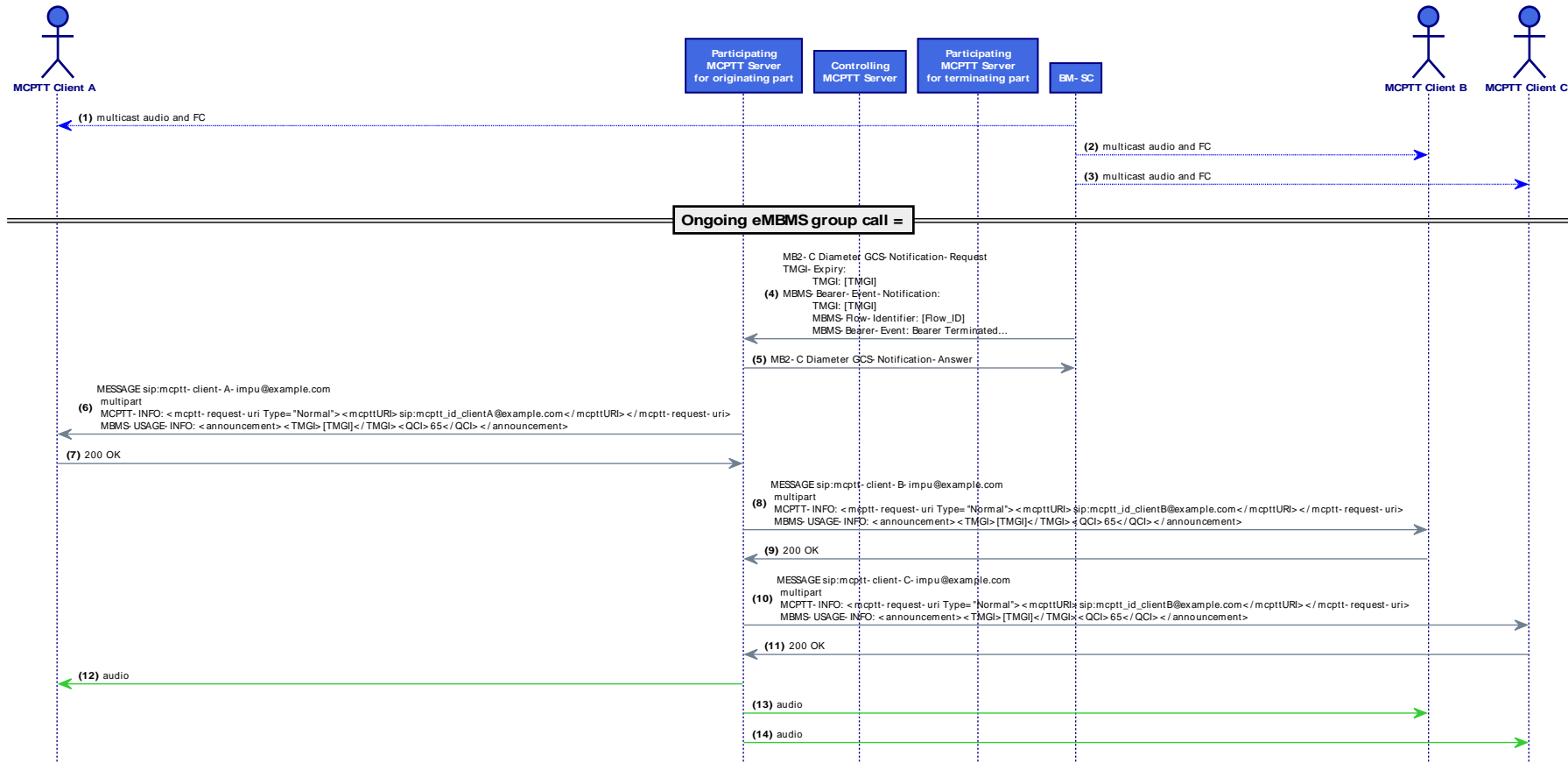


Figure 83: EMBMS/SWITCHTOUNITMGIEXP/01 Message Sequence

## Message Details

[1] MB2-C GCS-Notification-Request BM-SC --> MCPTT Participating

```
Origin-Host: bm-sc.example.com
Origin-Realm: example.com
Destination-Host: mcptt-orig-part-server.example.com
Destination-Realm: example.com
Auth-Application-Id: 3GPP MB2-C (16777335)
TMGI-Expiry:
  TMGI: 864a1600f110
  MBMS-Service-ID: 0x86a16
  MCC: 001
  MNC: 01
MBMS-Bearer-Event-Notification:
  TMGI: 864a1600f110
  MBMS-Service-ID: 0x86a16
  MCC: 001
  MNC: 01
MBMS-Flow-Identifier: 0001
MBMS-Bearer-Event: 0x00000001
  .... ...1 = Bearer Terminated: Set
```

[2] MB2-C GCS-Notification-Answer MCPTT Participating --> BM-SC

```
Origin-Host: mcptt-orig-part-server.example.com
Origin-Realm: example.com
Auth-Application-Id: 3GPP MB2-C (16777335)
Result-Code: DIAMETER_SUCCESS (2001)
```

[3] MESSAGE MCPTT Participating --> MCPTT Client A

```
MESSAGE sip:mcptt-client-A-impu@example.com SIP/2.0
From: <sip:mcptt-mbms-service@example.com>;tag=[tag]
To: <sip:mcptt-client-A-impu@example.com>
Call-ID: [call_id]
CSeq: [seq] MESSAGE
Accept-Contact: *;+g.3gpp.icsi-ref="urn:3Aurn-7%3A3gpp-service.ims.icsi.mcptt";require;explicit
Accept-Contact: *;+g.3gpp.mcptt;require;explicit
Content-Type: multipart/mixed;boundary=[boundary]
P-Asserted-Service: urn:urn-7:3gpp-service.ims.icsi.mcptt
P-Asserted-Identity: <sip:mcptt-mbms-service@example.com>

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcpttinfo xmlns="urn:3gpp:ns:mcpttInfo:1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <mcptt-Params>
    <mcptt-request-uri type="Normal">
      <mcpttURI>sip:mcptt_id_clientA@example.com</mcpttURI>
    </mcptt-request-uri>
  </mcptt-Params>
</mcpttinfo>

--[boundary]
Content-Type: application/vnd.3gpp.mcptt-mbms-usage-info+xml

<?xml version="1.0" encoding="UTF-8"?>
<mcptt-mbms-usage-info xmlns="urn:3gpp:ns:mcpttMbmsUsage:1.0">
  <announcement>
    <TMGI>864a1600f110</TMGI>
    <QCI>65</QCI>
  </announcement>
</mcptt-mbms-usage-info>

--[boundary]--
```

## Interoperability Test Description

Table 92: EMBMS/SWITCHTOUNITMGIEXP/01 ITD

Interoperability Test Description			
<b>Identifier</b>	EMBMS/SWITCHTOUNITMGIEXP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, eMBMS signalling using SIP to the clients and MB2-C/U interfaces to the BM-SC to switch to unicast		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• Diameter in MB2-C (see ETSI TS 129 468 [23])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC</li> <li>• MCPTTClient_EMBMS (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> <li>• Ongoing group call and MBMS bearer established</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	BM-SC notifies the Participating about TMGI expiration
	2	stimulus	Participating notifies "n" users in the group call previously using eMBMS about the expiration
	3	check	Group call continues using multi-unicast flows

## 7.7 Affiliation (AFFIL)

### 7.7.1 MCPTT User subscribes to its own affiliation [AFFIL/DET/01]

A registered MCPTT User subscribes to its affiliation by following clauses 9.2.1.3 and 9.2.2.2.4 in ETSI TS 124 379 [9]. Regardless it is its own or other user's affiliation the procedure is rather equivalent. The MCPTT Client sends a SIP SUBSCRIBE message setting as Request-URI the public service identity identifying the originating participating MCPTT function serving the MCPTT user and an application/vnd.3gpp.mcptt-info+xml MIME body. In the application/vnd.3gpp.mcptt-info+xml MIME body, the <mcptt-request-uri> element is set to the MCPTT ID of the targeted MCPTT user (himself or other). The Expires header is set to its maximum value.

That subscription is forwarded to the MCPTT Controlling server.

Once the subscription is confirmed the originating participating MCPTT server will create SIP NOTIFY requests based on the information received from the MCPTT Controlling server according to ETSI TS 124 229 [6], IETF RFC 3856 [26], and IETF RFC 6665 [34] containing an application/pidf+xml MIME body indicating per-user affiliation information.



## Message Sequence Diagram

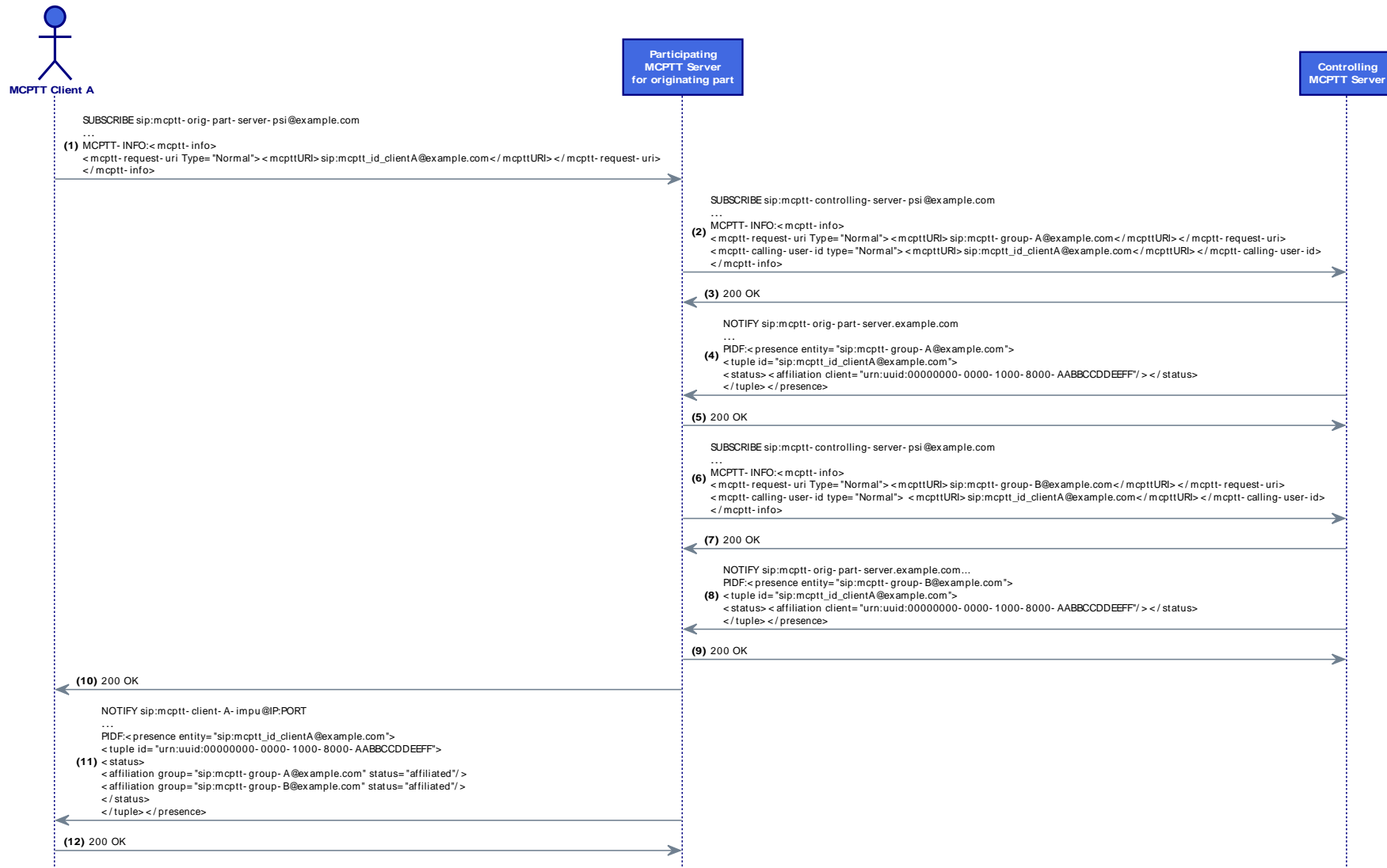


Figure 84: AFFIL/DET/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 93: AFFIL/DET/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	AFFIL/DET/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and proper affiliation information retrieval		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL (clause 6.2)</li> <li>• MCPTT-Part_AFFIL (clause 6.5)</li> <li>• MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) sends an affiliation subscription (SIP SUBSCRIBE) request to its MCPTT originating participating server
	2	stimulus	The MCPTT originating participating server forwards the SUBSCRIBE to the controlling
	3	stimulus	The MCPTT controlling server sends a NOTIFY related to the subscription to the participating
	4	check	Affiliation information is correctly received at the MCPTT Client upon proper NOTIFY forwarding by its participating

### 7.7.2 MCPTT User subscribes to the affiliation of another user [AFFIL/DET/02]

The procedures are the same as in clause 7.7.1 but including the mcptt\_id of the targeted user in the <mcptt-request-uri> element of the mcptt-info body in the SIP SUBSCRIBE. Furthermore the affiliation information shall be requested from the MCPTT participating server of the targeted user.

Message Sequence Diagram

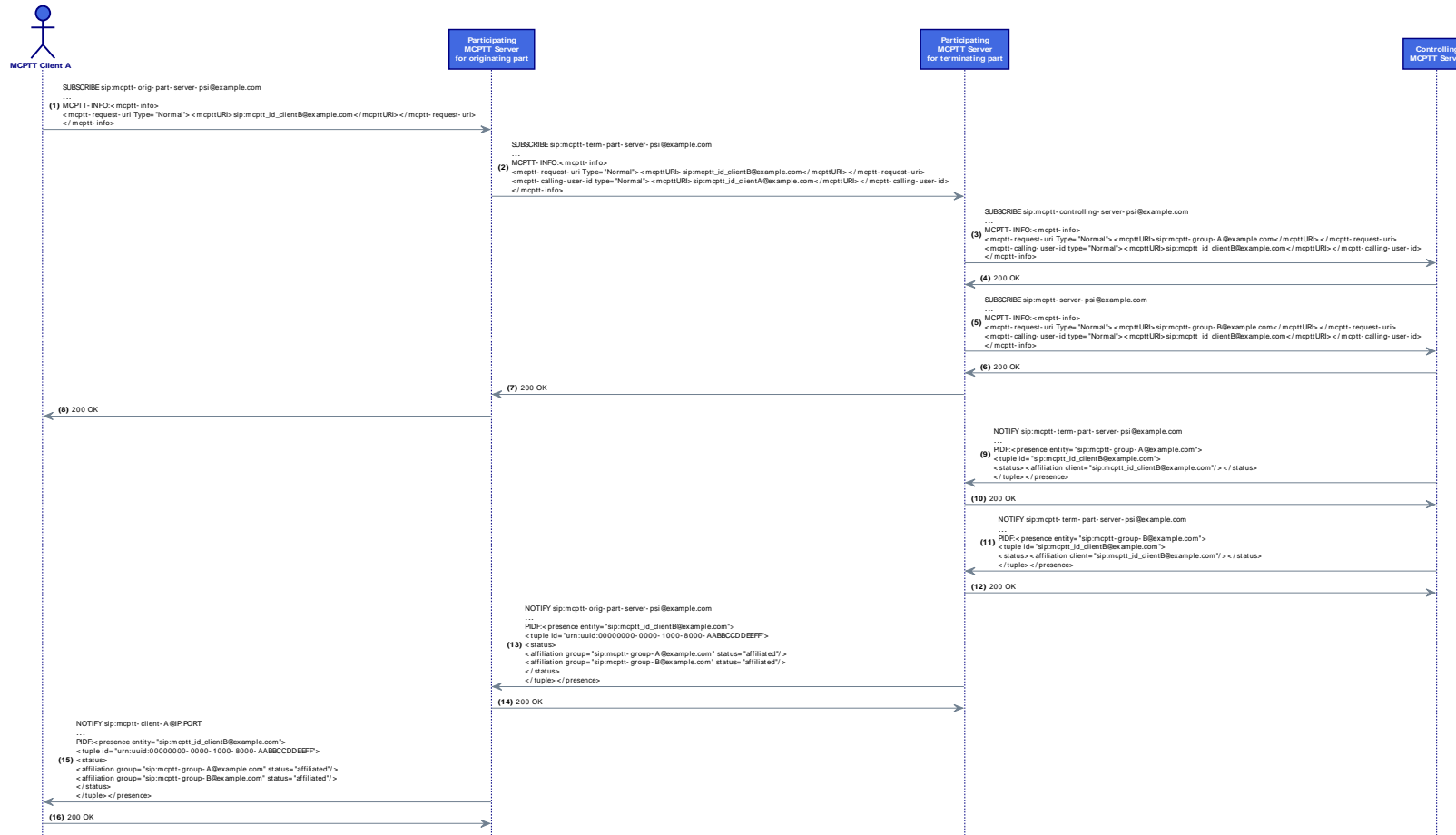


Figure 85: AFFIL/DET/02 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 94: AFFIL/DET/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	AFFIL/DET/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and proper affiliation information retrieval		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL (clause 6.2)</li> <li>• MCPTT-Part_AFFIL (clause 6.5)</li> <li>• MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) sends an affiliation subscription (SIP SUBSCRIBE) request to its MCPTT originating participating server with the targeted user's mcptt_id (mcptt_id_clientA@example.com) in the <mcpttrequest-uri> element
	2	stimulus	The MCPTT originating participating server forwards the SUBSCRIBE to the controlling
	3	stimulus	The MCPTT controlling forwards the SUBSCRIBE to the targeted user (terminating) participating server
	4	stimulus	The terminating MCPTT participating server updates the affiliation status by sending "n" NOTIFY(es) to the controlling
	5	stimulus	The MCPTT controlling server sends a NOTIFY related to the subscription to the participating
	6	check	Affiliation information is correctly received at the MCPTT Client upon proper NOTIFY forwarding by its participating

### 7.7.3 MCPTT User requests its affiliation to a set of groups [AFFIL/CHANGE/01]

The MCPTT Client submits an affiliation status change triggered by the MCPTT User itself (clauses 9.2.1.2 and 9.2.2.2.3 in ETSI TS 124 379 [9]).

In order to do so it shall create a SIP PUBLISH request including both an mcptt-info MIME body with the targeted mcptt\_id and an application/pdf+xml MIME body indicating per-user affiliation information.

To refresh the affiliation subscription information different Expires header values shall be used following IETF RFC 3903 [27]: 4294967295 if the targeted MCPTT user is interested in at least one MCPTT group at the targeted MCPTT client or 0 if the targeted MCPTT user is no longer interested in any MCPTT group at the targeted MCPTT client.

The participating server shall inform the client about the status of the affiliation change request (e.g. affiliating or affiliated) with NOTIFY messages which contain per-user affiliation status information.

Message Sequence Diagram

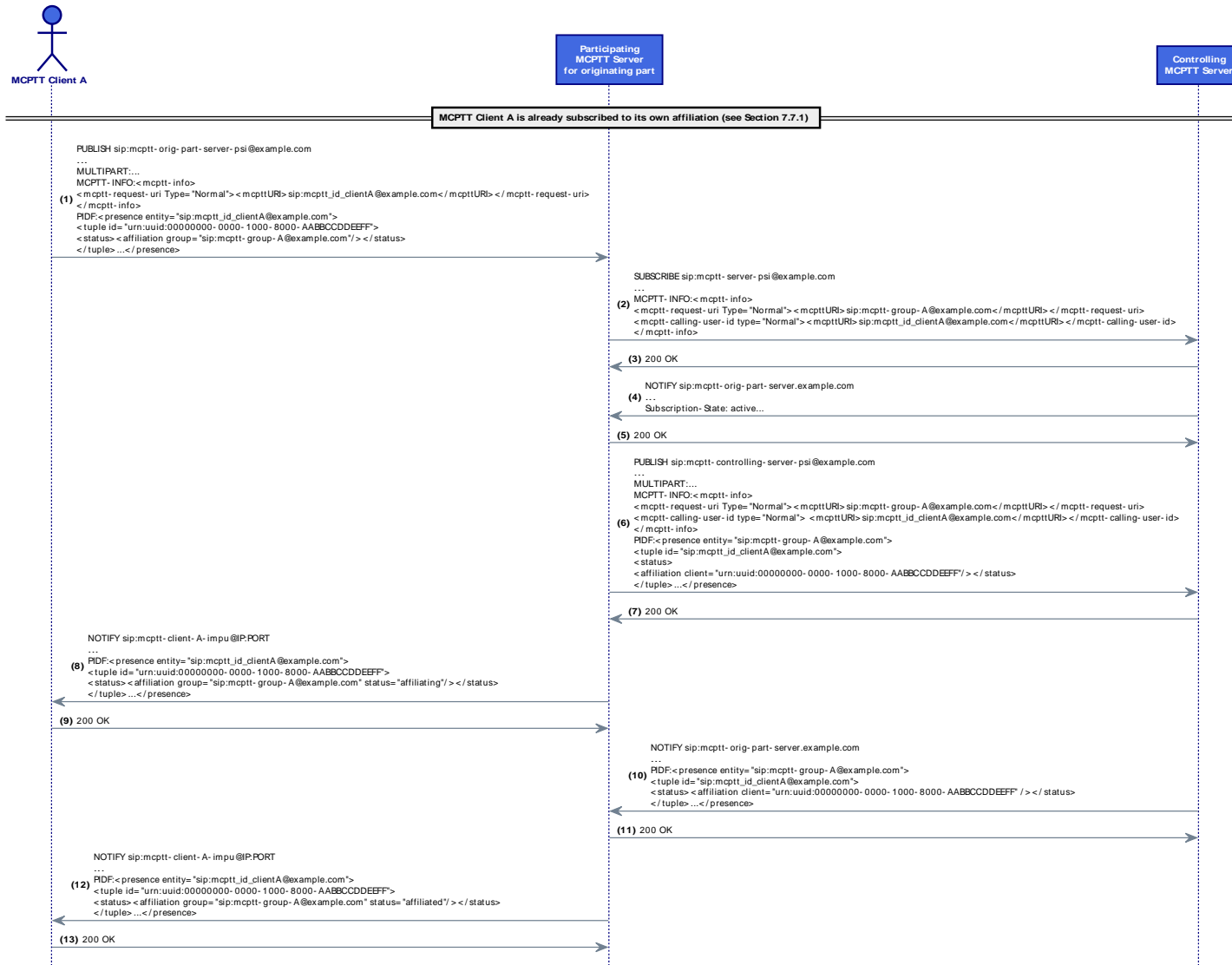


Figure 86: AFFIL/CHANGE/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 95: AFFIL/CHANGE/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	AFFIL/CHANGE/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and affiliation status properly changed		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL (clause 6.2)</li> <li>• MCPTT-Part_AFFIL (clause 6.5)</li> <li>• MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) sends an affiliation change (SIP PUBLISH) request to its MCPTT originating participating server with the targeted user's mcptt_id in the <mcptt-request-uri> field
	2	stimulus	The MCPTT originating participating server SUBSCRIBES to the controlling for the request group
	3	stimulus	The MCPTT controlling server NOTIFYes user's current status
	4	stimulus	The MCPTT participating server PUBLISHes the new affiliation status to the request (and already) subscribed group
	5	stimulus	The MCPTT controlling server sends a NOTIFY related to the subscription to the participating
	6	check	Affiliation information is correctly received at the MCPTT Client upon proper NOTIFY forwarding by its participating

#### 7.7.4 MCPTT User requests the affiliation of other User to a set of groups in mandatory mode [AFFIL/CHANGE/02]

The procedure is equivalent to that in clause 7.7.3 but using the proper targeted user's mcptt\_id in the different requests.

The originating participant server shall forward the PUBLISH to the participating server serving the targeted user.

In mandatory mode, no confirmation of the user is requested. It will be informed of the affiliation changes with NOTIFY requests by its participating server if subscribed to this event.

It is assumed that MCPTT Client A is subscribed to the affiliation information of MCPTT Client B as described in clause 7.7.2 and that MCPTT Client B is subscribed to its own affiliation as described in clause 7.7.1 in the procedures included here.

Message Sequence Diagram

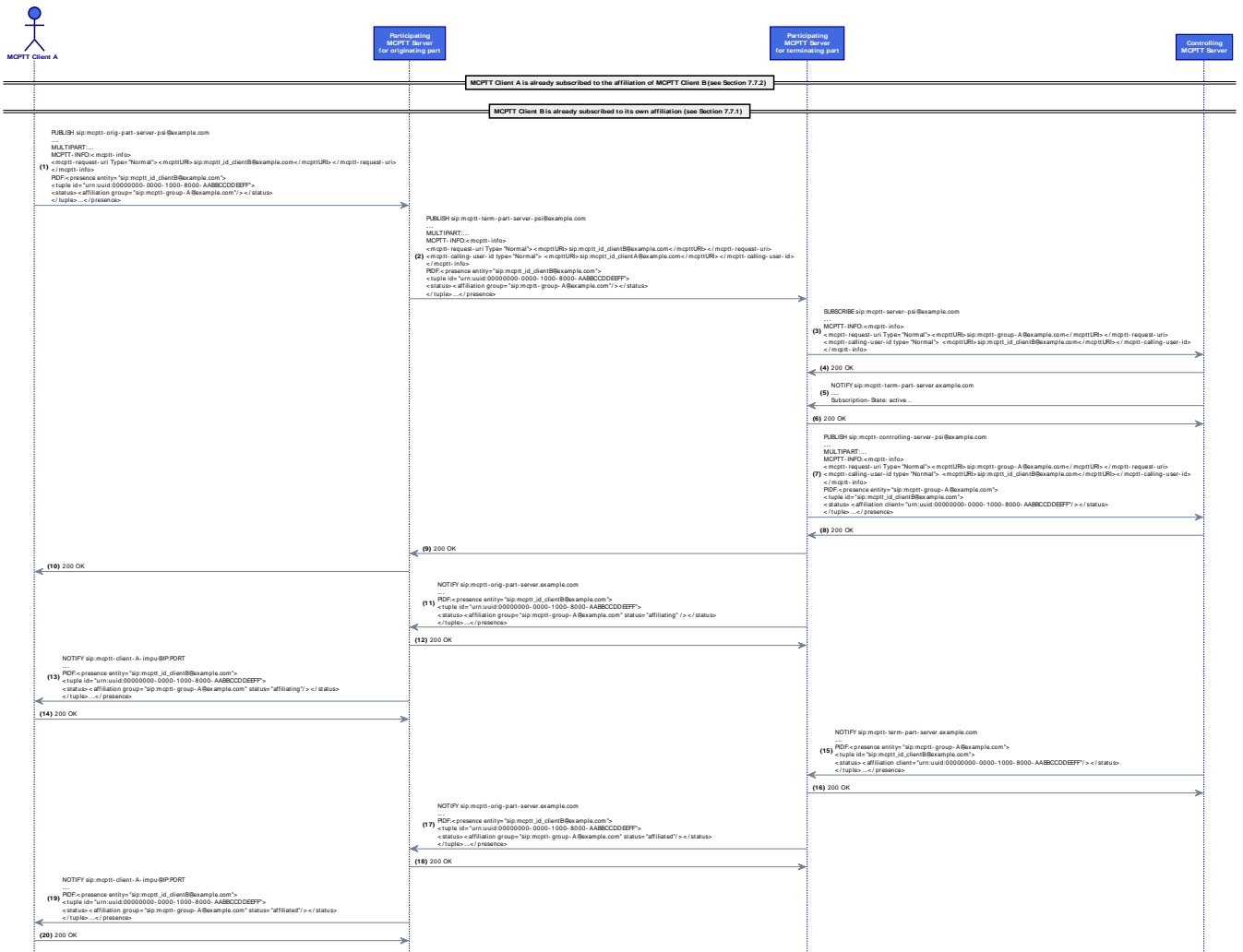


Figure 87: AFFIL/CHANGE/02 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 96: AFFIL/CHANGE/02 ITD

Interoperability Test Description			
<b>Identifier</b>	AFFIL/CHANGE/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and proper affiliation information change		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL (clause 6.2)</li> <li>• MCPTT-Part_AFFIL (clause 6.5)</li> <li>• MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) sends an affiliation change (SIP PUBLISH) request to its MCPTT originating participating server with the targeted user's mcptt_id (mcptt_id_clientB@example.com) in the <mcpttrequest-uri> element of the mcptt-info body
	2	stimulus	The MCPTT originating participating server forwards the PUBLISH to the controlling
	3	stimulus	The MCPTT controlling SUBSCRIBES to the targeted user (terminating) participating server
	4	stimulus	The MCPTT controlling sends the PUBLISH to the targeted user (terminating) participating server
	5	stimulus	The terminating MCPTT participating server acknowledges the affiliation request and later updates the affiliation status by sending "n" NOTIFY(es) to the controlling
	6	stimulus	The MCPTT controlling server sends "n"+1 NOTIFY related to the subscription to the participating
	7	check	Affiliation information is correctly received at the MCPTT Client upon proper NOTIFY forwarding by its participating

### 7.7.5 MCPTT User requests the affiliation of other User to a set of groups in negotiated mode [AFFIL/CHANGE/03]

When a user wants to affiliate another user to a certain group in negotiated mode, it shall send a SIP MESSAGE request with application/vnd.3gpp.mcptt-affiliation-command+xml content indicating the groups the target user shall affiliate to or de-affiliate from.

The originating participant server shall forward the MESSAGE request to the participating server serving the targeted user.

In negotiated mode, a confirmation of the user concerning the new affiliation modifications is requested. In fact, it will need to affiliate itself using the procedures described in clause 7.7.3.

It is assumed that MCPTT Client A is subscribed to the affiliation information of MCPTT Client B as described in clause 7.7.2 and that MCPTT Client B is subscribed to its own affiliation as described in clause 7.7.1 in the procedures included here.



# Message Sequence Diagram

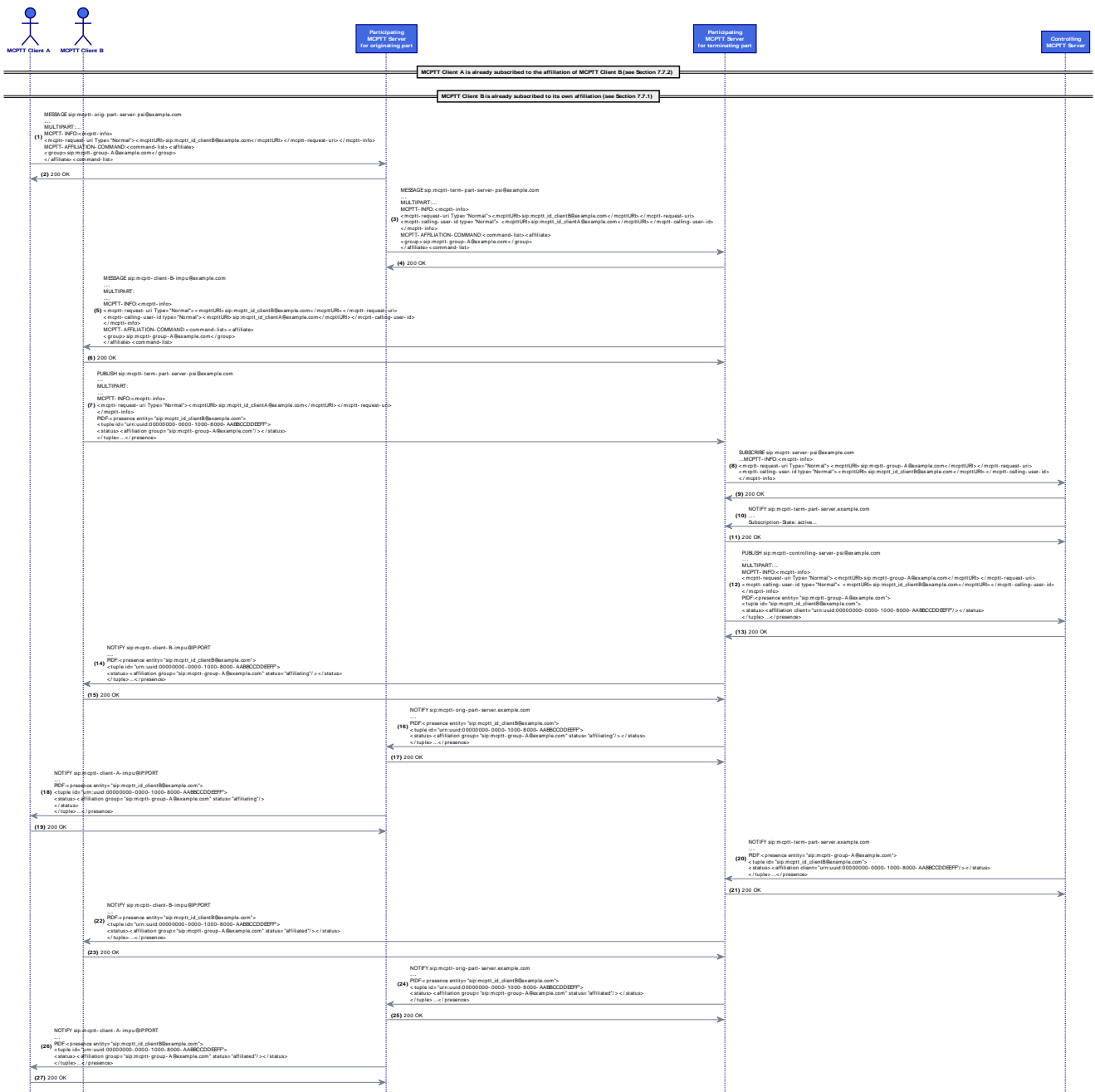


Figure 88: AFFIL/CHANGE/03 Message Sequence

## Message Details

## Trace Pending

## Interoperability Test Description

Table 97: AFFIL/CHANGE/03 ITD

Interoperability Test Description			
<b>Identifier</b>	AFFIL/CHANGE/03		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and proper affiliation information change on behalf of other user on negotiated mode		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL (clause 6.2)</li> <li>• MCPTT-Part_AFFIL (clause 6.5)</li> <li>• MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	Stimulus	User 1 (mcptt_id_clientA@example.com) sends an affiliation change of another user in negotiated mode by creating and submitting a SIP MESSAGE request with proper format to its participating
	2	Stimulus	The MCPTT originating participating server forwards the MESSAGE to the terminating participating of the targeted user
	3	Stimulus	The MCPTT terminating participating forwards the MESSAGE to the targeted user, which acknowledges and PUBLISHes its new affiliation
	4	Stimulus	The MCPTT terminating participating sends a SUBSCRIBE if needed and PUBLISHes the new affiliation to the controlling
	5	Stimulus	The MCPTT controlling sends the NOTIFY back to both the targeted user and the originating one through its participating-
	6	Check	Affiliation information is correctly changed and notified to both requester and targeted users

## 7.8 Location (LOC)

### 7.8.1 MCPTT Client Configuration upon 3<sup>rd</sup> party register [LOC/3PRTYREG/CONFIG/01]

Upon a successful IMS registration and 3<sup>rd</sup> party REGISTER arriving at the Participating a new Location Reporting Configuration message shall be created following the procedures in clause 13.2.2 in ETSI TS 124 379 [9].

Message Sequence Diagram

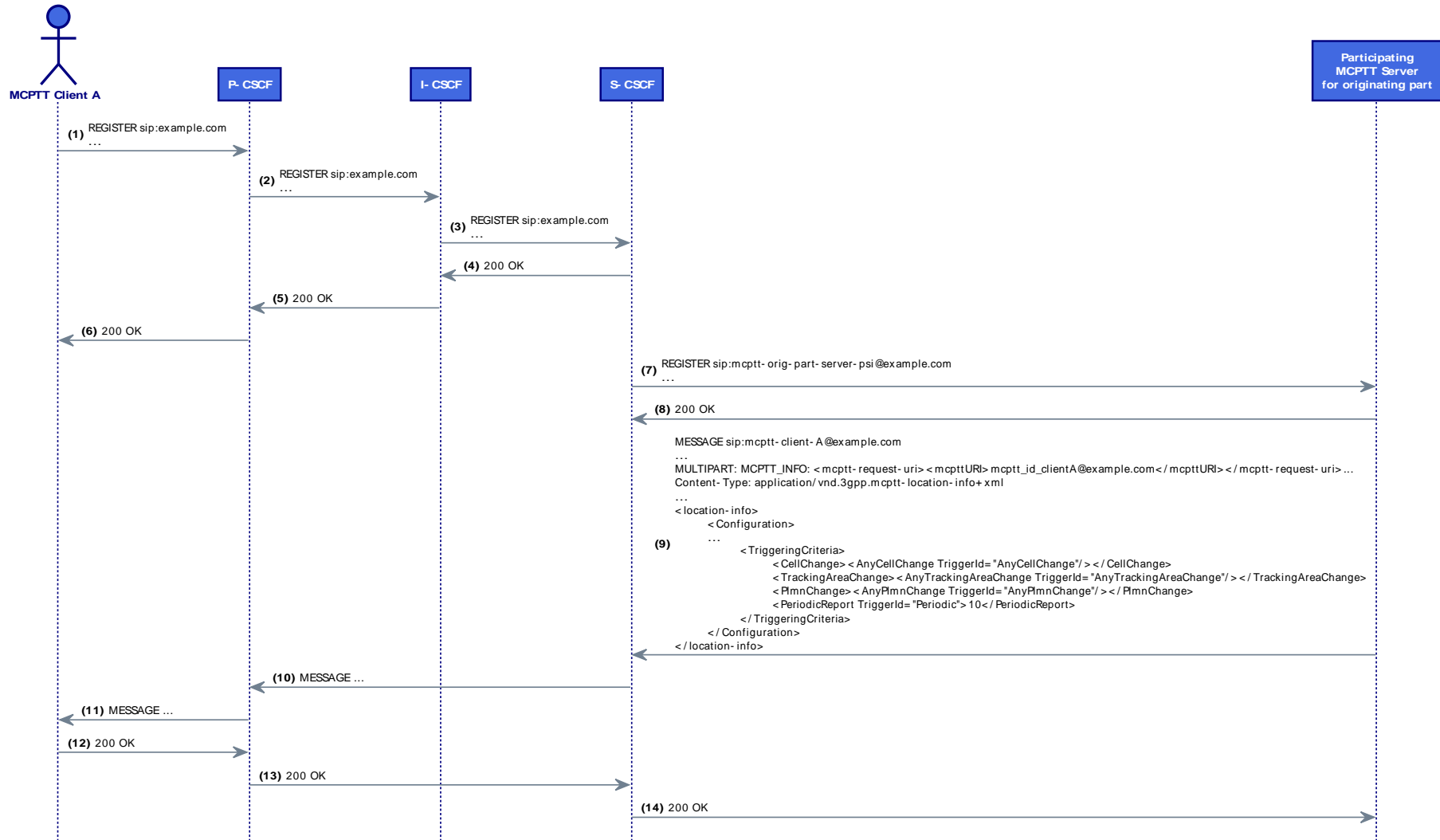


Figure 89: LOC/3PRTYREG/CONFIG/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 98: LOC/3PRTYREG/CONFIG/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	LOC/3PRTYREG/CONFIG/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and configuration of location reporting mechanism		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_LOC</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_REGAUTH, MCPTT-Part_LOC (clause 6.5)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) registers to IMS/MCPTT
	2	Check	Participating sending location reporting configuration MESSAGE to the MCPTT Client
	3	Verify	Location (including different triggers) properly configured in the MCPTT Client

## 7.8.2 Explicit Location reporting request sent to the MCPTT Client [LOC/REQUEST/01]

The participating MCPTT function may request the MCPTT client to report its location. In that case, the participating MCPTT functions shall generate a SIP MESSAGE request in accordance as described in clause 13.2.3 in ETSI TS 124 379 [9]. Upon its reception, the MCPTT Client shall send a location report as specified in clause 13.3.4 in ETSI TS 124 379 [9] and reset the reporting timer.

Message Sequence Diagram

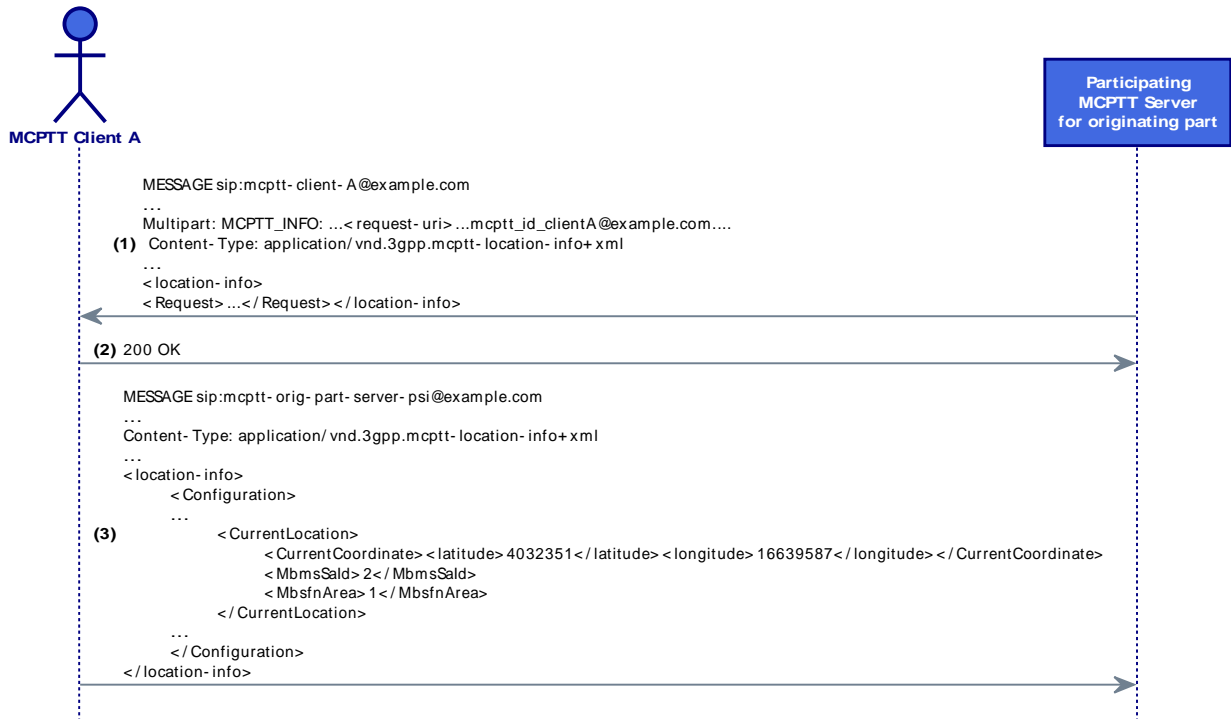


Figure 90: LOC/REQUEST/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 99: LOC/REQUEST/01 ITD

Interoperability Test Description			
<b>Identifier</b>	LOC/REQUEST/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and the procedures for requesting a location report		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_LOC</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_LOC (clause 6.5)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	Participating server needs MCPTT Client location report
	2	check	Participating sending location report request MESSAGE to the MCPTT Client
	3	check	The MCPTT Client generates a report upon the reception of the request
	4	verify	Location properly requested to the MCPTT Client and successfully transmitted to the Participating

### 7.8.3 MCPTT Client Location submitted upon some trigger [LOC/SUBMISSION/01]

Upon some time/distance/multicast-area related trigger, the MCPTT Client generates a Location Report. Such Report shall be sent with a SIP MESSAGE request in accordance as described in clause 13.2.4 in ETSI TS 124 379 [9].

Message Sequence Diagram

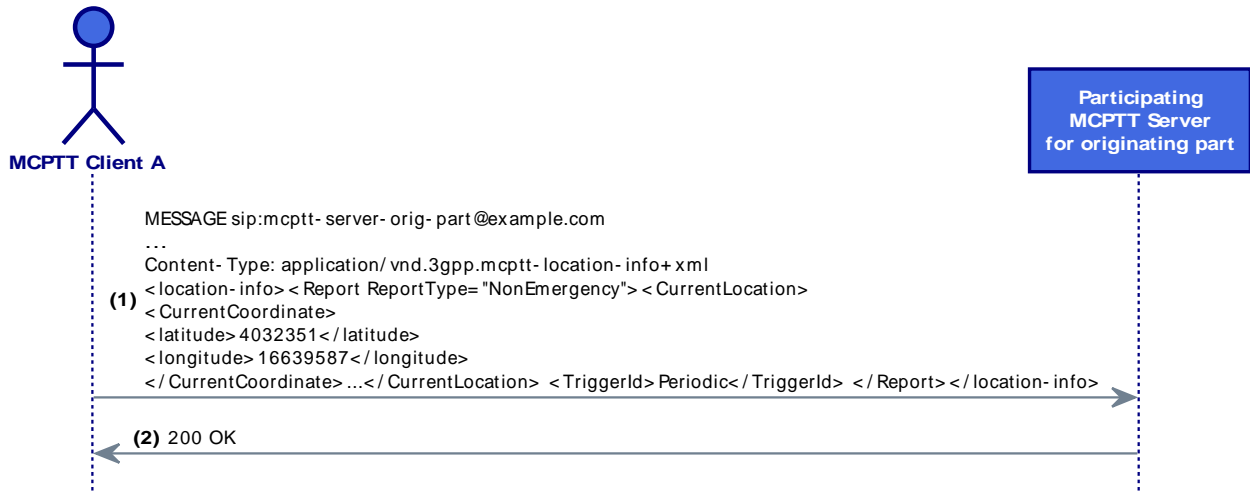


Figure 91: LOC/SUBMISSION/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 100: LOC/SUBMISSION/01 ITD

Interoperability Test Description			
<b>Identifier</b>	LOC/SUBMISSION/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and the procedures for submitting a location report		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_LOC</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_LOC (clause 6.5)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• MCPTT Client Location reporting mechanism properly configured</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	Any of the Location triggers is activated
	2	check	The MCPTT Client generates a report upon the reception of the request
	3	check	The MCPTT Client sends a SIP MESSAGE with the report
	4	verify	Location properly received and decoded in the MCPTT participating server

## 7.9 OAM procedures (CSC)

### 7.9.0 General

ETSI TS 124 484 [14] defines the mechanism for online and offline configuration. Since the offline configuration specific mechanism is out of scope of 3GPP in the 2<sup>nd</sup> Plugtests online mechanisms online will be considered. Although there are several OMA XDM based document operations defined, those ones that are crucial to support MCS configuration have been selected. Regarding the management of updates again the most basic case has been addressed.

According to ETSI TS 124 484 [14] the MC UE, using the identities obtained during MC user authentication, subscribes to different CSC documents. If these documents have been updated since the current version stored in the MC UE, then the MC UE will receive a SIP NOTIFY request with an XCAP Diff document (see IETF RFC 5875 [32]), in which case the CMC updates its local document copies.

Unless otherwise specified, MCPTT documents only (not MCData or MCVideo) have been considered for this 2<sup>nd</sup> Plugtests for simplicity purposes. Note that in the diagrams MCS (instead of MCPTT) term is used to allow future extensions to other services. Finally, in this 2<sup>nd</sup> Plugtests the "document retrieval" operations only have been considered. Creation, update and delete operations will be considered in future Plugtests.

### 7.9.1 Subscription and UE configuration document retrieval from the MC UE [CSC-CMS/UECONF/UE/01]

As aforementioned, in order to obtain access to MC services the MC UE needs to obtain configuration data either online via the network or offline. The mechanism to discover the online or offline configuration management server is dependent on the protocol used to manage and configure the MO and is out of scope of ETSI TS 124 484 [14] or any other TS. In this test case document will assume the online mechanism is used.

Note that in clause 6.3.13.2.2 in ETSI TS 124 484 [14] two working modes are considered:

- Direct subscription.
- Subscription to multiple documents simultaneously using the subscription proxy function.

For the 2<sup>nd</sup> Plugtests, in clauses 7.9.1, 7.9.2 and 7.9.3 the direct subscription is considered while clause 7.9.7 considers the subscription to multiple CMS and GMS documents using the subscription proxy function. Note that direct subscription is the only mechanism considered for the MCS server, so that test cases in clauses 7.9.4 and 7.9.6 use it.

**NOTE:** Due to several inconsistencies and interpretation of the direct subscription mechanism in 3GPP's TS the participants of the 2<sup>nd</sup> MCPTT Plugtests agreed NOT to test direct subscription and use subscription proxy instead. The test cases are however still included here for future references. UE configuration document retrieval in direct subscription mode (together with the overall UE bootstrapping mechanism defined in clause 4.2.1 in ETSI TS 124 484 [14]) comprises sending a SIP SUBSCRIBE following the procedures in clause 6.3.13.2.2 (subclause a) in ETSI TS 124 484 [14], using the base URI of CMSXCAPRootURI as Request URI, later handling it (by CMS server) following clause 6.3.13.3.2.3 behaving as a notifier as in IETF RFC 5875 [32]. In the NOTIFY the URLs of the document to be retrieved and ETAGs will be provided to the CMC (assuming simplest diff-processing "no-patching" mechanism). Later, the CMC in the UE will download and parse the ue-config document using the OMA-XDM procedures defined in [36].

Message Sequence Diagram

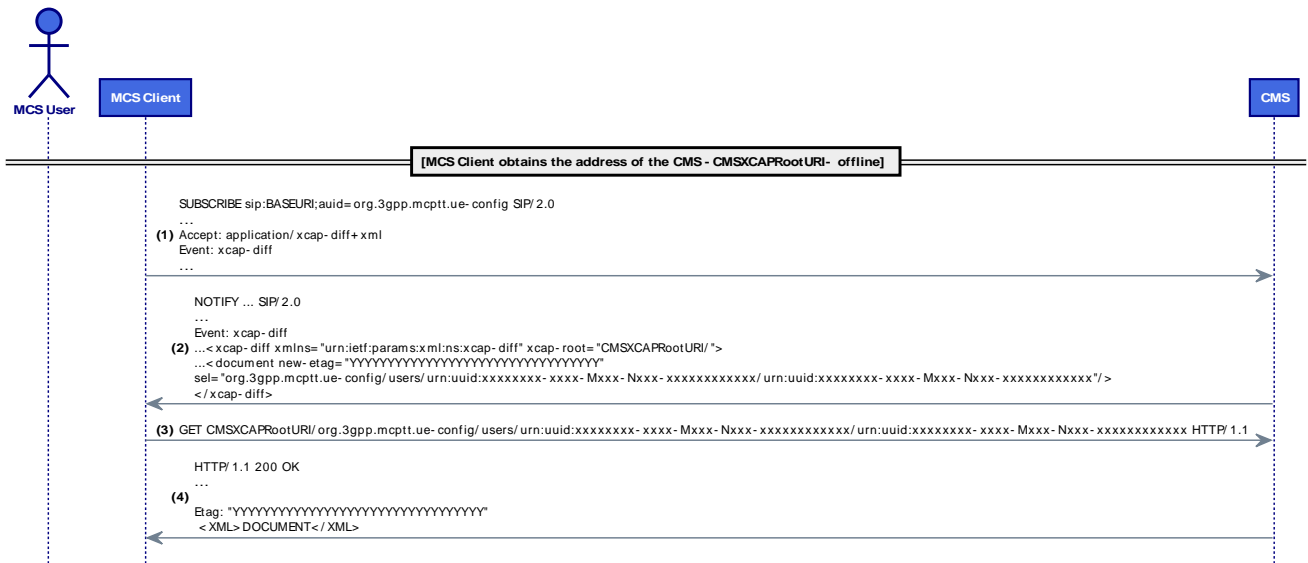


Figure 92: CSC-CMS/UECONF/UE/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 101: CSC-CMS/UECONF/UE/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CSC-CMS/UECONF/UE/01		
<b>Test Objective</b>	Verify IP connectivity, proper access from the MCS Client to the CMS and retrieval and parsing of Release 14 XML		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see [14])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_CMS, MCDData-Client_CMS, MCVideo-Client_CMS</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario, access to the CSC servers via the proper APN</li> <li>CMSXCAPRootURI offline provisioned</li> </ul>		
Test Sequence	Step	Type	Description
	1	check	MCS Clients send a SIP SUBSCRIBE to the CMS using direct subscription and the proper auid
	2	check	CMS processes the SUBSCRIBE, behaves as notifier and returns the xcap-diff document with the URLs of the related document and ETAGs
	3	check	CMC in the MCS client parses the xcap-diff document and identifies the new/updated ue-config document URL
	4	check	The CMC in the MCS clients sends a HTTP GET request to the ue-config URL using OMA XDM procedures
	5	check	CMC downloads correctly the ue-config document and parses it
	6	verify	MCS client correctly configured according to the new/updated document



## 7.9.2 Subscription and user profile configuration document retrieval from the MC UE [CSCCMS/UPROCONF/UE/01]

The mechanism is equivalent to that in clause 7.9.1 but using the direct subscription mechanism for the user profile document (clause 8.3 in ETSI TS 124 484 [14]). As shown in the diagram the AUID and XUI would be then different. Note that MCPTT user profile documents are "XDM collections" in the user's directory in the "Users Tree", in accordance with [36].

Additionally, since direct subscription is considered and no user authentication/service authorization would be in place yet this test case, it would only be applicable for the bootstrapping procedure with a default user considered in clause 4.2.2.1 in ETSI TS 124 484 [14]: "If the MCS UE initial configuration MO contains a <default-user-profile> element and the identified default MCS user profile configuration MO(s) have changed from the version stored in the MC UE, the updated default MCS user profile configuration MO(s) are downloaded to the MC UE". As a consequence, at least one instance of an MCS user profile configuration document needs to first be created on the configuration management server, containing the "XUI-URI" attribute and "user-profile-index" attribute (as defined in clause 8.3.2.1 in ETSI TS 124 484 [14]) that are included in the <Default-user-profile> element.

NOTE: According to ETSI TS 124 484 [14] the default MCS user profile configuration MO(s) define the default identity(s) for the enabled mission critical service(s) and the profile of services available to the user (e.g. emergency MCPTT services) prior to user authentication (see note in clause 7.9.1).

### Message Sequence Diagram



Figure 93: CSC-CMS/UPROCONF/UE/01 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

**Table 102: CSC-CMS/UPROCONF/UE/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CSC-CMS/UPROCONF/UE/01		
<b>Test Objective</b>	Verify IP connectivity, proper access from the MCS Client to the CMS and retrieval and parsing of Release 14 XML		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_CMS, MCData-Client_CMS, MCVideo-Client_CMS</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario, access to the CSC servers via the proper APN</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• CMSXCAPRootURI offline provisioned and &lt;Default-user-profile&gt; related data pre-provisioned in the proper path in the CMS XDM repository</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	check	MCS Client sends a SIP SUBSCRIBE to the CMS using direct subscription and the proper AUID
	2	check	CMS processes the SUBSCRIBE, behaves as notifier and returns the xcap-diff document with the URL of the related document and ETAGs
	3	check	CMC in the MCS client parses the xcap-diff document and identifies the new/updated user profile document URL
	4	check	The CMC in the MCS clients sends a HTTP GET request to the user-profile of the default user's URL using OMA XDM procedures
	5	check	CMC downloads correctly the user profile document and parses it
	6	verify	MCS client correctly configured according to the new/updated document valid till later MCPTT authentication is completed

### 7.9.3 Subscription and service configuration document retrieval from the MC UE [CSCCMS/SERVCONF/UE/01]

The test case is equivalent to that described in clause 7.9.1 with direct subscription using the service configuration document as described in clause 8.4 in ETSI TS 124 484 [14] (see note in clause 7.9.1).

Message Sequence Diagram

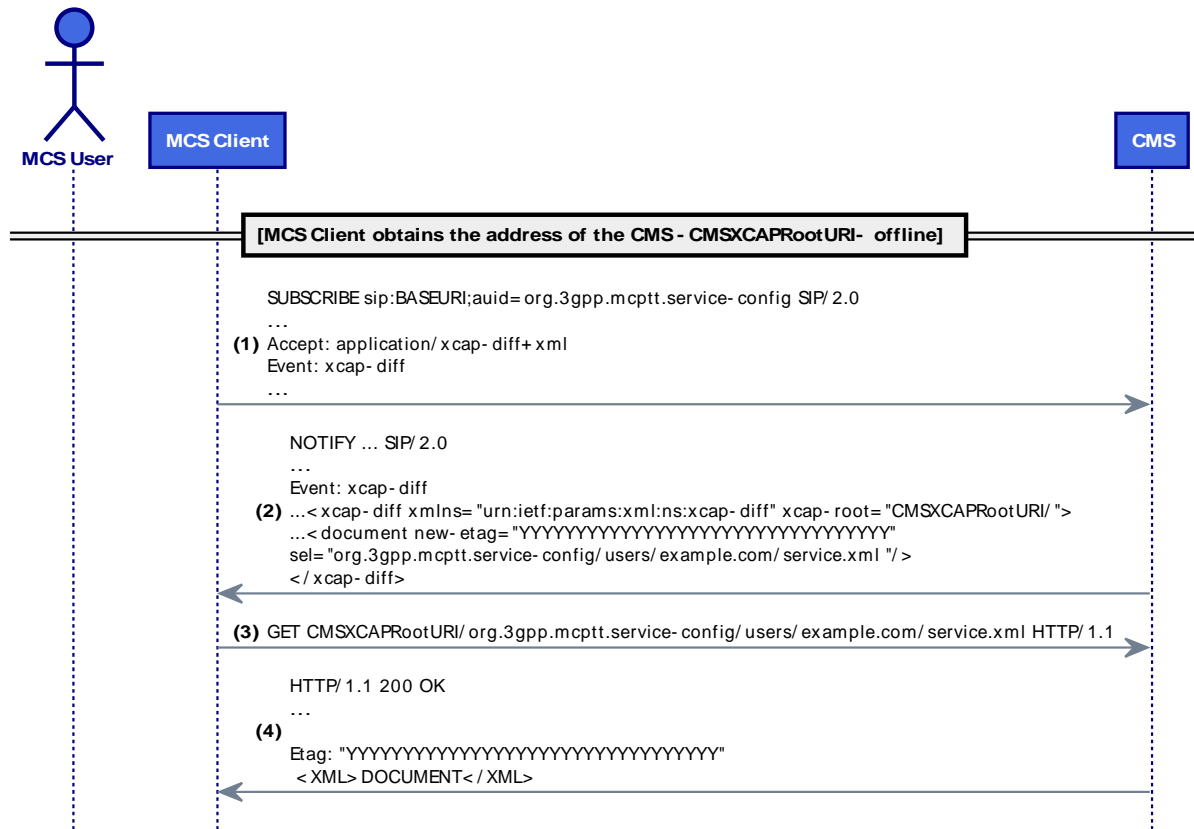


Figure 94: CSC-CMS/SERVCONF/UE/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 103: CSC-CMS/SERVCONF/UE/01 ITD

Interoperability Test Description	
<b>Identifier</b>	CSC-CMS/SERVCONF/UE/01
<b>Test Objective</b>	Verify IP connectivity, proper access from the MCS Client to the CMS and retrieval and parsing of Release 14 XML
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
<b>References</b>	<ul style="list-style-type: none"> <li>CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])</li> </ul>
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_CMS, MCData-Client_CMS, MCVideo-Client_CMS</li> </ul>
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario, access to the CSC servers via the proper APN</li> <li>CMSXCAPRootURI offline provisioned</li> </ul>

Test Sequence	Step	Type	Description
	1	check	MCS Client sends a SIP SUBSCRIBE to the CMS using direct subscription and the proper auid
	2	check	CMS processes the SUBSCRIBE, behaves as notifier and returns the xcap-diff document with the URLs of the related document and ETAGs
	3	check	CMC in the MCS client parses the xcap-diff document and identifies the new/updated service config document URL
	4	check	The CMC in the MCS clients sends a HTTP GET request to the ue-config URL using OMA XDM procedures
	5	check	CMC downloads correctly the service-config document and parses it
	6	verify	MCS client correctly configured according to the new/updated document

### 7.9.4 Subscription and service configuration document retrieval from the MCS Server [CSCCMS/SERVCONF/MCSSERV/01]

The test case is equivalent to that described in clause 7.9.3 with direct subscription but from the MCS server clauses 6.3.13.2.3 and 6.3.13.3.2.4 in ETSI TS 124 484 [14].

Note that the MCS server would subscribe to the MCS service configuration document for each mission critical organization that is supported by the MCS server. How the MCS server is provisioned with the identities of the mission critical organizations is out of scope of 3GPP's TSs.

NOTE: Due to the issues of the direct subscription mechanism (see note in clause 7.9.1) in order to enable the needed testing, an alternative subscription proxy based approach has been proposed.

#### Message Sequence Diagram - DIRECT SUBSCRIPTION-

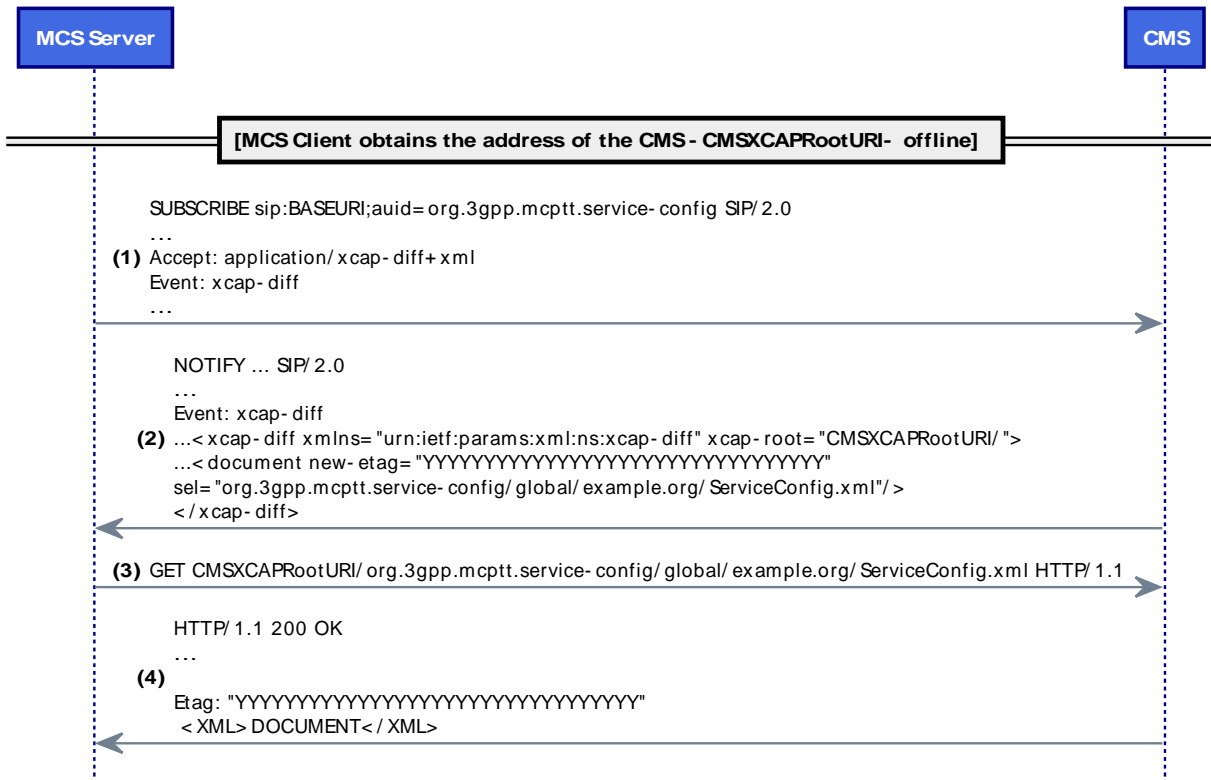


Figure 95: CSC-CMS/SERVCONF/MCSSERV/01 Message Sequence

Message Sequence Diagram - SUBSCRIPTION PROXY-

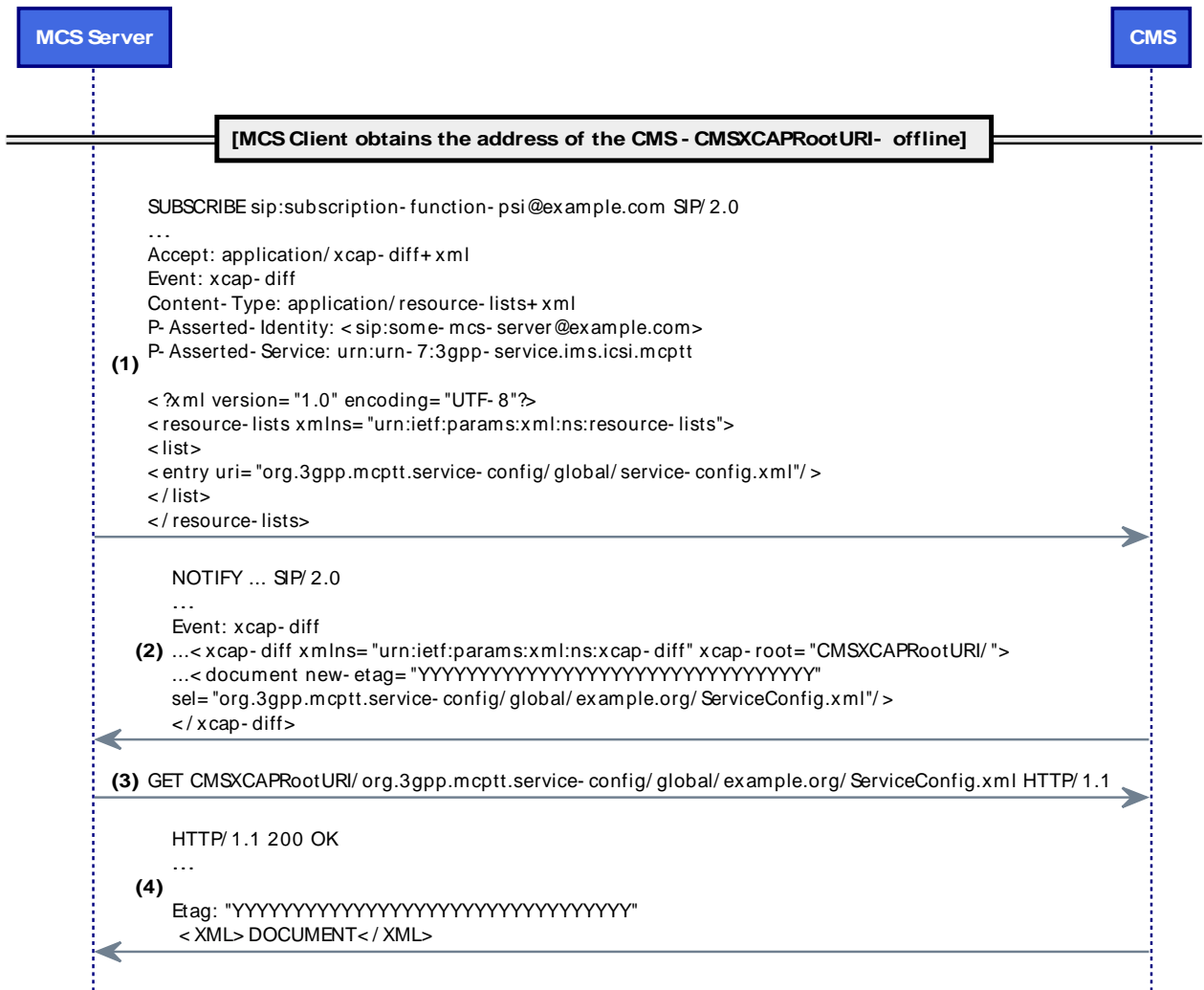


Figure 96: CSC-CMS/SERVCONF/MCSSERV/01-b Message Sequence

Message Details

Trace Pending

**Table 104: CSC-CMS/SERVCONF/MCSSERTV/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CSC-CMS/SERVCONF/MCSSERTV/01		
<b>Test Objective</b>	Verify IP connectivity, proper access from the MCS Server to the CMS and retrieval and parsing of Release 14 XML		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Server_CMS, MCData-Server_CMS, MCVideo-Server_CMS</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• CMSXCAPRootURI offline provisioned</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	check	The MCS Server sends a SIP SUBSCRIBE to the CMS using direct subscription/subscription proxy and the proper auid
	2	check	CMS processes the SUBSCRIBE, behaves as notifier and returns the xcap-diff document with the URL of the related document and ETAGs
	3	check	The MCS Server parses the xcap-diff document and identifies the new/updated service config document URL
	4	check	The MCS Server sends a HTTP GET request to the ue-config URL using OMA XDM procedures
	5	check	The MCS Server downloads correctly the service config document and parses it
	6	verify	Organization's service correctly configured according to the new/updated document in the CMS Server

### 7.9.5 Subscription and group document retrieval from the MC UE [CSC-GMS/GROUP/UE-/01]

This test case defines the procedures of GMC (GMS client in the UE) to subscribe to notification of changes of one or more MCS group documents of MCS groups identified by MCS group IDs following clauses 6.3.13.2.1, 6.3.13.3, 6.2.2 and 6.3.3.2 in ETSI TS 124 481 [11]. Note that all the requested group IDs are owned by the own MCS provider of the GMS. The GMS performing the subscription proxy function will behave as notifier as in IETF RFC 5875 [32]. In the NOTIFY the URLs of the document to be retrieved and ETAGs will be provided to the CMC (assuming simplest diff-processing "no-patching" mechanism). Later, the CMC in the UE will download and parse the ue-config document using the OMA-XDM procedures defined in [36] and [37].

Note that the subscription proxy function is considered in the diagram as a part of the GMS, although it could be a common element shared by other CSC servers like in clause 7.9.7.

Message Sequence Diagram

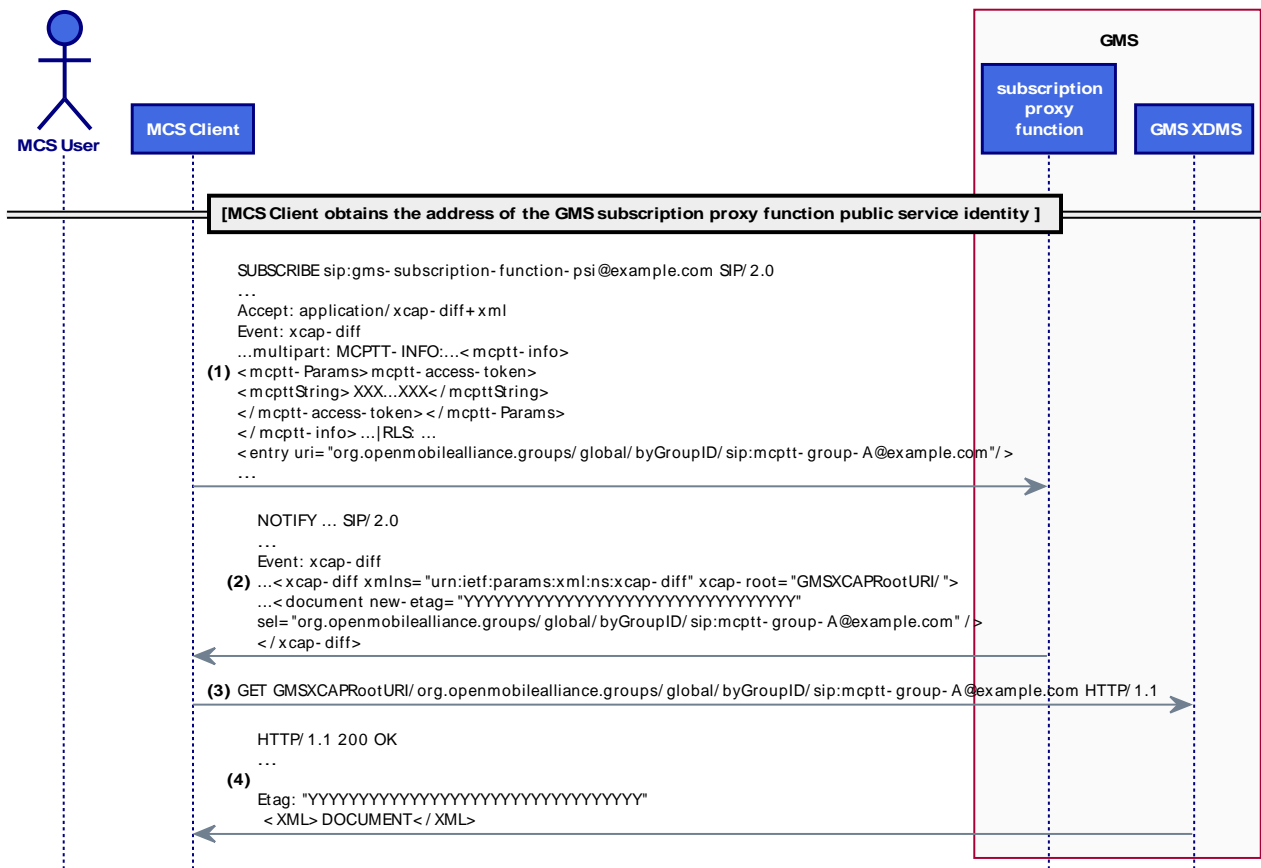


Figure 97: CSC-GMS/GROUP/UE/01 Message Sequence

Message Details

Trace Pending

Table 105: CSC-GMS/GROUP/UE/01 ITD

Interoperability Test Description	
Identifier	CSC-GMS/GROUP/UE/01
Test Objective	Verify IP connectivity, proper access from the MCS Client to the GMS and retrieval and parsing of Release 14 XML
Configuration(s)	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
References	<ul style="list-style-type: none"> <li>CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])</li> </ul>
Applicability	<ul style="list-style-type: none"> <li>MCPTT-Client_GMS, MCData-Client_GMS, MCVideo-Client_GMS</li> </ul>
Pre-test conditions	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario, access to the CSC servers via the proper APN</li> <li>GMS subscription proxy function public service identity preconfigured</li> </ul>

Test Sequence	Step	Type	Description
	1	check	MCS Clients sends a SIP SUBSCRIBE to the GMS subscription proxy
	2	check	GMS processes the SUBSCRIBE, behaves as notifier and returns the xcap-diff document with the URLs of the related documents and ETAGs
	3	check	GMC in the MCS client parses the xcap-diff document and identifies the URL(s) of the new/updated group document(s) by groupID
	4	check	The GMC in the MCS clients sends a HTTP GET request to the parsed URL(s) using OMA XDM procedures
	5	check	GMC downloads correctly the group document and parses it
	6	verify	MCS client correctly configured according to the new/updated document

### 7.9.6 Subscription and group document retrieval from the MCS Server [CSC-GMS/GROUP/MCSSERV/01]

This test case defines the procedures of GMC (GMS client in the UE) to subscribe to notification of changes of one or more MCS group documents of MCS groups identified by MCS group IDs following clauses 6.3.13.2.2, 6.2.4 in ETSI TS 124 481 [11] together with the mechanisms in clause 7.9.5.

#### Message Sequence Diagram

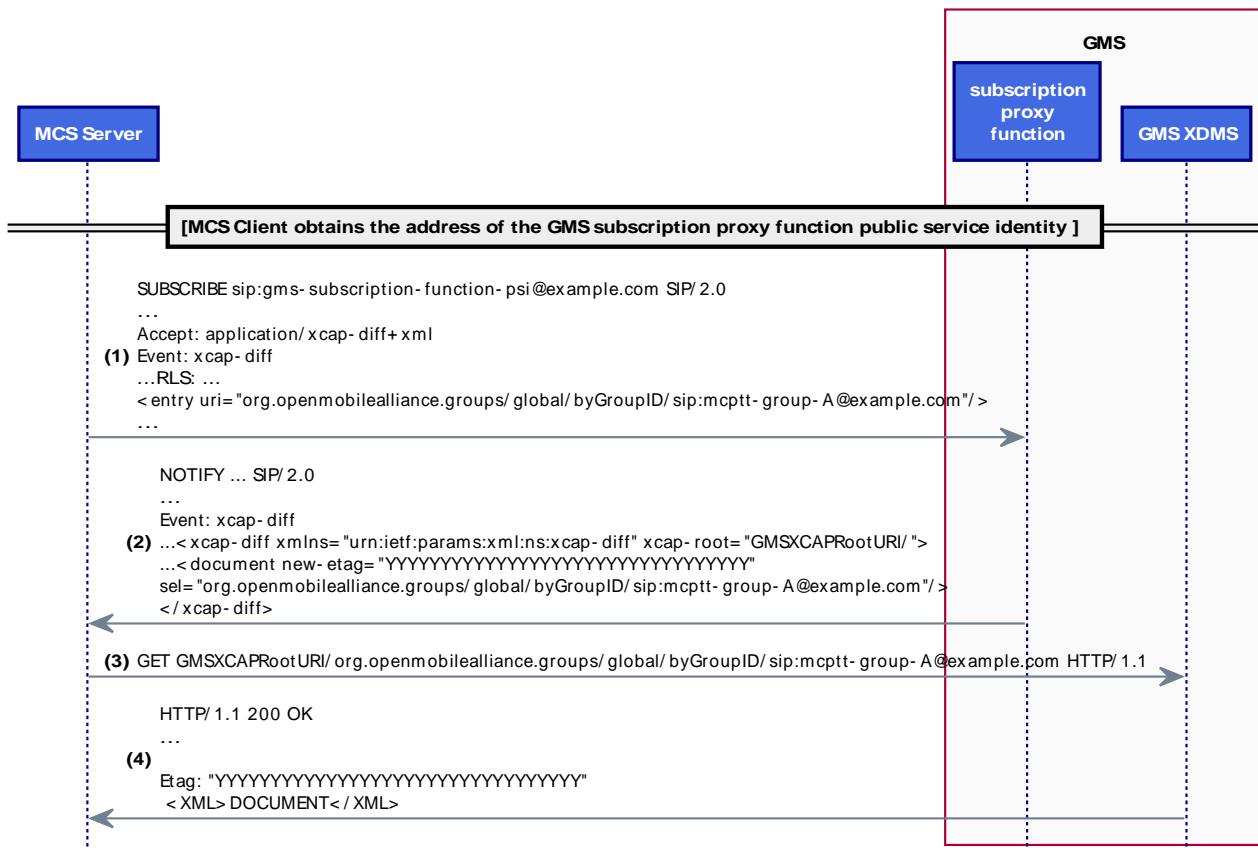


Figure 98: CSC-GMS/GROUP/MCSSERV/01 Message Sequence

Message Details

Trace Pending



Table 106: CSC-GMS/GROUP/MCSSERV/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CSC-GMS/GROUP/MCSSERV/01		
<b>Test Objective</b>	Verify IP connectivity, proper access from the MCS Client to the GMS and retrieval and parsing of Release 14 XML		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Ctrl_GMS, MCData-Ctrl_GMS, MCVideo-Ctrl_GMS</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario, access to the CSC servers via the proper APN</li> <li>• GMS subscription proxy function public service identity preconfigured</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	check	MCS sends a SIP SUBSCRIBE to the GMS subscription proxy
	2	check	GMS processes the SUBSCRIBE, behaves as notifier and returns the xcap-diff document with the URLs of the related documents and ETAGs
	3	check	The MCS Server sends parses the xcap-diff document and identifies the URL(s) of the new/updated group document(s) by groupID
	4	check	The MCS Server sends a HTTP GET request to the parsed URL(s) using OMA XDM procedures
	5	check	MCS Server downloads correctly the group document and parses it
	6	verify	MCS Server correctly configured according to the new/updated document

### 7.9.7 Subscription and retrieval of multiple documents from the CMS using subscription proxy [CSC/MULTIPLESUBS/UE/01]

Once authenticated a MCS client uses the "subscription to multiple documents simultaneously using the subscription proxy function" working modes as defined in clause 6.3.13.2.2 in ETSI TS 124 484 [14].

Message Sequence Diagram

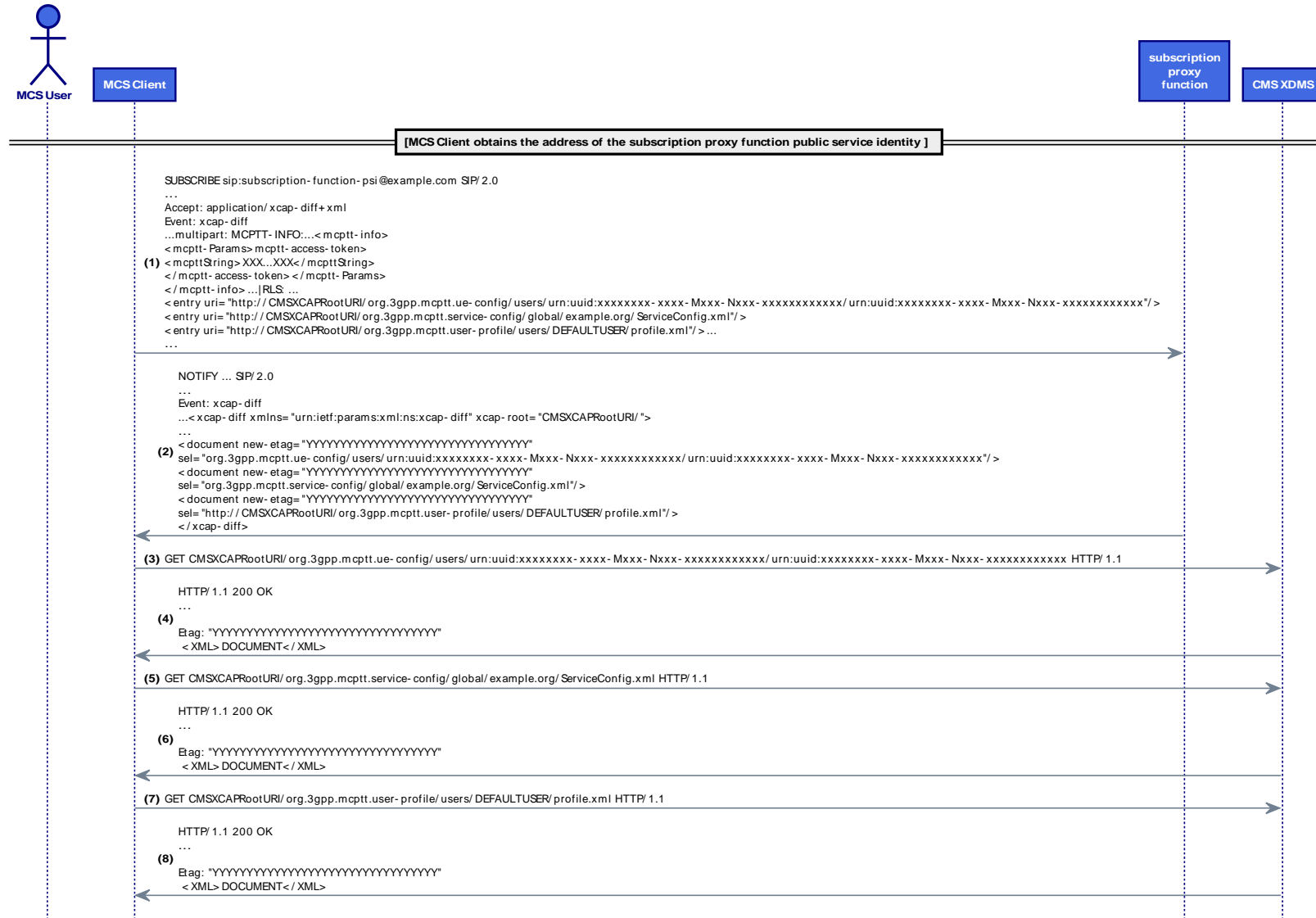


Figure 99: CSC/MULTIPLESUBS/UE/01 Message Sequence

Message Details

Trace Pending

**Table 107: CSC/MULTIPLESUBS/UE/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	CSC/MULTIPLESUBS/UE/01		
<b>Test Objective</b>	Verify IP connectivity, proper access from the MCS Client to the CMS and retrieval and parsing of Release 14 XML		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_CMS, MCData-Client_CMS, MCVideo-Client_CMS</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario, access to the IdMS via the proper APN and tunnelling mechanism -if any-</li> </ul>		
Test Sequence	Step	Type	Description
	1	check	MCS Clients send a SIP SUBSCRIBE to the subscription proxy function psi
	2	check	Subscription proxy processes the SUBSCRIBE, behaves as notifier and returns the xcap-diff document with the URLs of the related documents and ETAGs
	3	check	CMC in the MCS client parses the xcap-diff document and identifies the new/updated document URL
	4	check	The CMC in the MCS client sends a HTTP GET request to the different CMS XDM related URLs using OMA XDM procedures
	5	check	CMC download correctly the document and parses them
	6	verify	MCS client correctly configured according to the new/updated documents

### 7.9.8 Subscription and retrieval of multiple documents from the GMS using subscription proxy [CSC/MULTIPLESUBSGMSGROUP/UE/01]

Once authenticated a MCS client uses the "subscription to multiple documents simultaneously using the subscription proxy function" working modes as defined in clause 6.3.13.2.2 in ETSI TS 124 484 [14].

Message Sequence Diagram

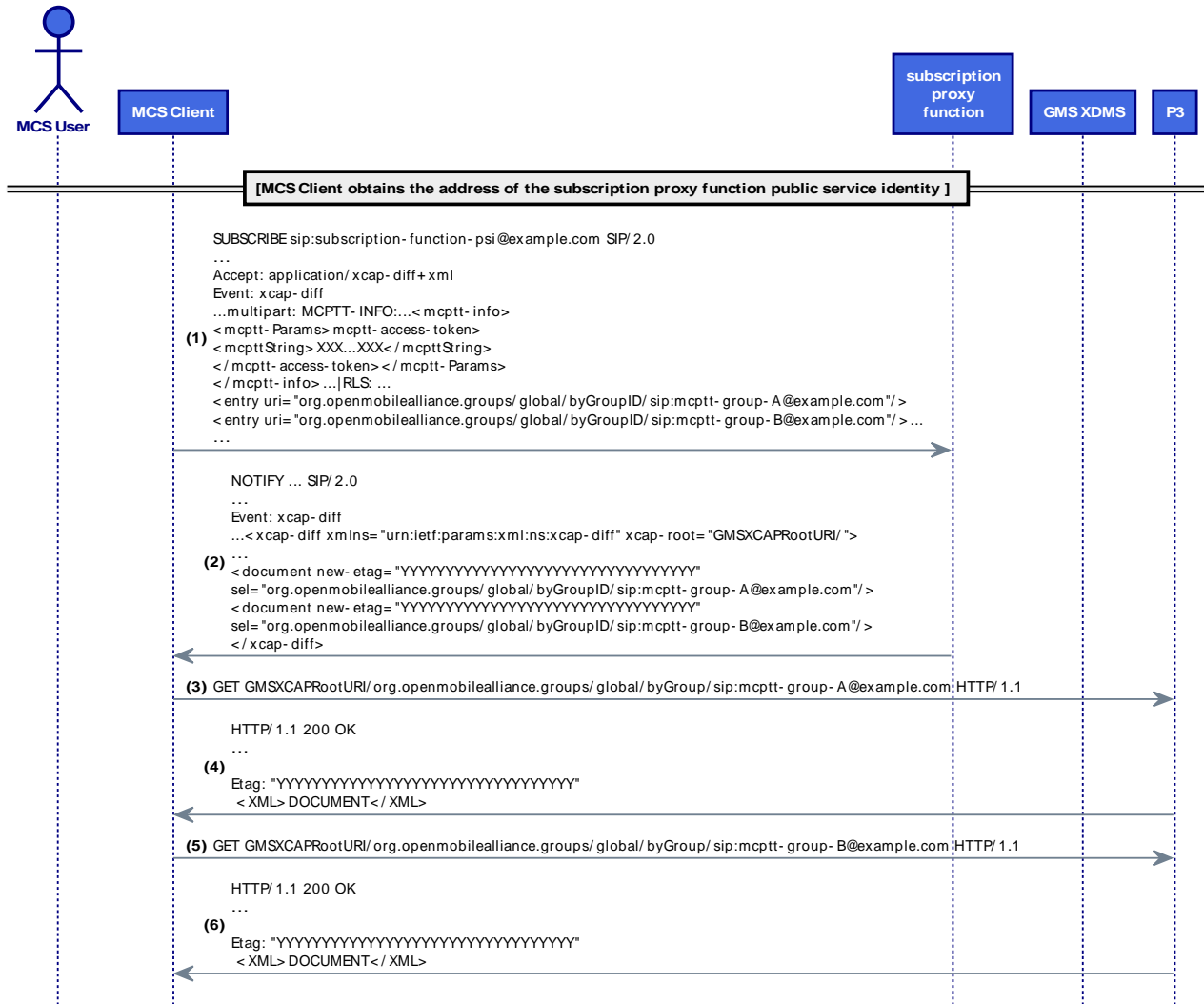


Figure 100: CSC/MULTIPLESUBMSGGROUP/UE/01 Message Sequence

Message Details

Trace Pending

Table 108: CSC/MULTIPLESUBSGMSGROUP/UE/01 ITD

Interoperability Test Description			
<b>Identifier</b>	CSC/MULTIPLESUBSGMSGROUP/UE/01		
<b>Test Objective</b>	Verify IP connectivity, proper access from the MCS Client to the CMS and retrieval and parsing of Release 14 XML		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• GMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_GMS, MCDData-Client_GMS, MCVideo-Client_GMS</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario, access to the IdMS via the proper APN and tunnelling mechanism - if any</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	check	MCS Clients send a SIP SUBSCRIBE to the subscription proxy function psi
	2	check	Subscription proxy processes the SUBSCRIBE, behaves as notifier and returns the xcap-diff document with the URLs of the related documents and ETAGs
	3	check	GMC in the MCS client parses the xcap-diff document and identifies the new/updated document URL
	4	check	The GMC in the MCS client sends a HTTP GET request to the different GMS XDM related URLs using OMA XDM procedures
	5	check	GMC download correctly the document and parses them
	6	verify	MCS client correctly configured according to the new/updated documents

## 7.10 Security mechanisms (SEC)

### 7.10.1 Key material download from KMS to MCPTT client (CSC-8) with proxy [SEC/KEYMDOWNLOAD/WPROXY/01]

In order to derive the keys that will be used for RTP, RTCP, floor control, MBMS control and XML encryption and to be able to decode the MIKEY-SAKKE messages sent by other clients (PCK distribution), GMS (GMK distribution) or MCPTT server (MuSiK distribution) for key distributions, the MCPTT client will need to download specific key material from a KMS. This test case deals with the standard procedure for this key material download from KMS to the MCPTT client. The MCPTT client will need to download both the KMS certificate and its own Key Set from the KMS. Key Set information can be confidentiality and integrity protected using a Transport key (Trk). How the Trk is exchanged between the MCPTT client and the KMS is out of scope of the present release of the MCPTT standard. These procedures can be found in ETSI TS 133 180 [24], clause 5.3.

Two deployment options have been proposed by the MCPTT standard: a direct connection between the MCPTT client and the KMS or a non-direct connection that uses an HTTP proxy in the path. This first test case will be focused on the second option. All procedures related to KMS access using a HTTP proxy are described ETSI TS 133 180 [24], clause 5.3.3.

The MCPTT client will first need to obtain an access-token to be authenticated by the KMS (for example by using the IdMS server as described in clause 7.4.1 of the present document).

Message Sequence Diagram

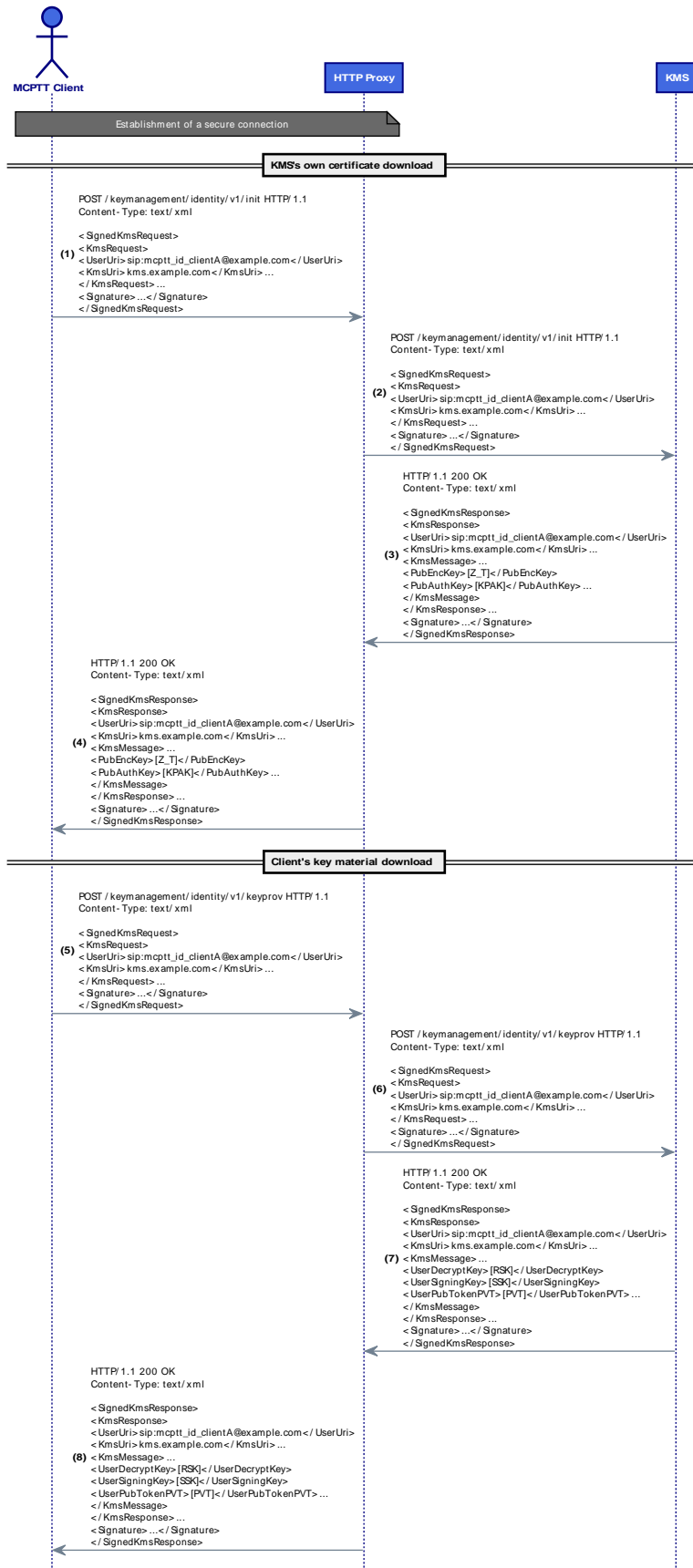


Figure 101: SEC/KEYMDOWNLOAD/WPROXY/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 109: SEC/KEYMDOWNLOAD/WPROXY/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	SEC/KEYMDOWNLOAD/WPROXY/01		
<b>Test Objective</b>	Verify KMS certificate and MCPTT client's key material download		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• HTTP (see IETF RFC 7230 [38])</li> <li>• TLS (see IETF RFC 8446 [39])</li> <li>• SSL (see IETF RFC 6101 [40])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_KMS (clause 6.2)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Client previously authenticated in the IdMS -or the Identity and Access Token have been received by other means</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	MCPTT Client A verifies that it has no key material or the key material has already expired
	2	check	Client establishes a secure connection with the HTTP proxy
	3	check	Client sends a HTTP POST request to obtain the KMS certificate
	4	check	HTTP POST request contains the access-token
	5	check	HTTP proxy forwards the HTTP POST request to KMS
	6	check	KMS responds with its own certificate
	7	check	HTTP proxy forwards the response
	8	check	Client receives KMS's own certificate
	9	check	Client sends a HTTP POST request to obtain its key material
	10	check	HTTP POST request contains the access-token
	11	check	HTTP proxy forwards the HTTP POST request to KMS
	12	check	KMS responds with the key material of client A
	13	check	HTTP proxy forwards the response
	14	check	Client receives its key material

### 7.10.2 Key material download from KMS to MCPTT server (CSC-9) with proxy [SEC/KEYMDOWNLOAD/WPROXY/02]

In order to derive the keys that will be used for MBMS control (MuSiK) and to be able to decode the MIKEY-SAKKE messages sent by clients (CSK distribution), the MCPTT server will need to download specific key material from a KMS. This test is similar to the one described in clause 7.10.1 but for the MCPTT server case.



Message Sequence Diagram

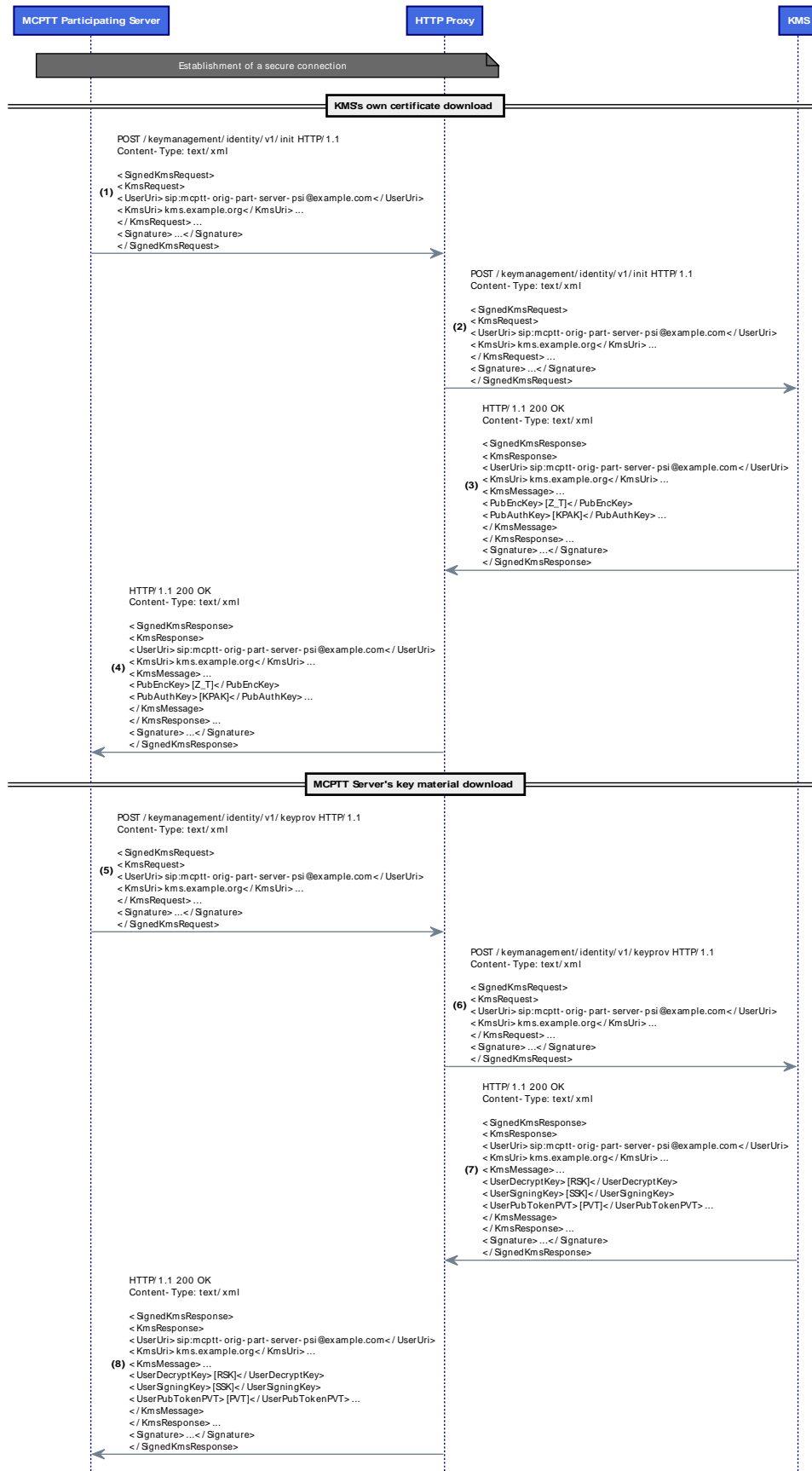


Figure 102: SEC/KEYMDOWNLOAD/WPROXY/02 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 110: SEC/KEYMDOWNLOAD/WPROXY/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	SEC/KEYMDOWNLOAD/WPROXY/02		
<b>Test Objective</b>	Verify KMS certificate and MCPTT server's key material download		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• HTTP (see IETF RFC 7230 [38])</li> <li>• TLS (see IETF RFC 8446 [39])</li> <li>• SSL (see IETF RFC 6101 [40])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Part_KMS</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	MCPTT server verifies that it has no key material or the key material has already expired
	2	check	MCPTT server establishes a secure connection with the HTTP proxy
	3	check	MCPTT server sends a HTTP POST request to obtain the KMS certificate
	4	check	HTTP POST request contains the access-token
	5	check	HTTP proxy forwards the HTTP POST request to KMS
	6	check	KMS responds with its own certificate
	7	check	HTTP proxy forwards the response
	8	check	MCPTT server receives KMS's own certificate
	9	check	MCPTT server sends a HTTP POST request to obtain its key material
	10	check	HTTP POST request contains the access-token
	11	check	HTTP proxy forwards the HTTP POST request to KMS
	12	check	KMS responds with the key material of MCPTT server
	13	check	HTTP proxy forwards the response
	14	check	MCPTT server receives its key material

### 7.10.3 Key material download from KMS to MCPTT GMS (CSC-10) with proxy [SEC/KEYMDOWNLOAD/WPROXY/03]

In order to derive the keys that will be used for the RTP encryption of MCPTT group calls (GMK) and to be able to encode the MIKEY-SAKKE messages sent for the distribution of these keys, the GMS will need to download specific key material from a KMS. This test is similar to the one described in clause 7.10.1 but for the GMS case.

Message Sequence Diagram

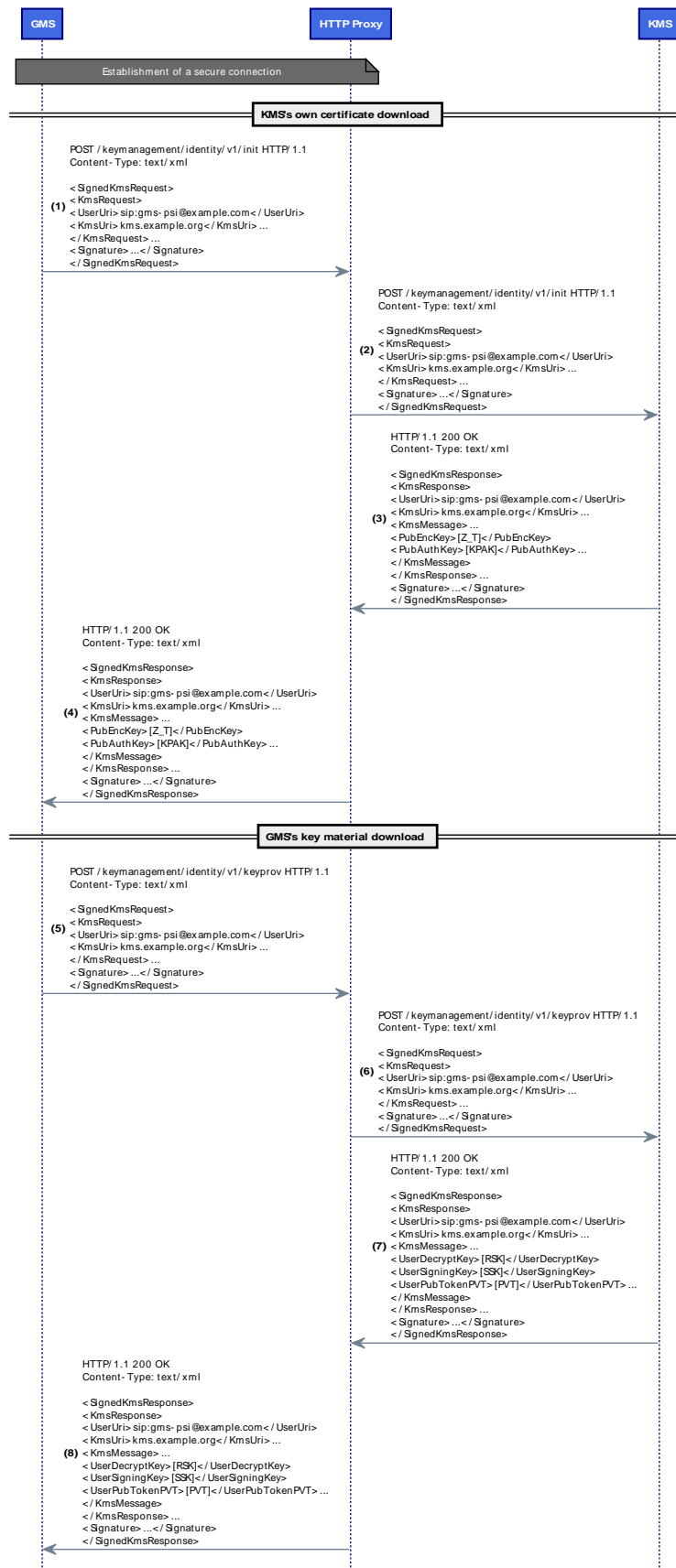


Figure 103: SEC/KEYMDOWNLOAD/WPROXY/03 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 111: SEC/KEYMDOWNLOAD/WPROXY/03 ITD**

Interoperability Test Description			
<b>Identifier</b>	SEC/KEYMDOWNLOAD/WPROXY/03		
<b>Test Objective</b>	Verify KMS certificate and GMS' key material download		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• HTTP (see IETF RFC 7230 [38])</li> <li>• TLS (see IETF RFC 8446 [39])</li> <li>• SSL (see IETF RFC 6101 [40])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• GMS_KMS</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	GMS verifies that it has no key material or the key material has already expired
	2	check	GMS establishes a secure connection with the HTTP proxy
	3	check	GMS sends a HTTP POST request to obtain the KMS certificate
	4	check	HTTP POST request contains the access-token
	5	check	HTTP proxy forwards the HTTP POST request to KMS
	6	check	KMS responds with its own certificate
	7	check	HTTP proxy forwards the response
	8	check	GMS receives KMS's own certificate
	9	check	GMS sends a HTTP POST request to obtain its key material
	10	check	HTTP POST request contains the access-token
	11	check	HTTP proxy forwards the HTTP POST request to KMS
	12	check	KMS responds with the key material of GMS
	13	check	HTTP proxy forwards the response
	14	check	GMS receives its key material

#### 7.10.4 Key material download from KMS to MCPTT client (CSC-8) without proxy [SEC/KEYMDOWNLOAD/WOPROXY/01]

This procedure is similar to the one described in clause 7.10.1 of the present document but without using an HTTP proxy in the connection path.

## Message Sequence Diagram

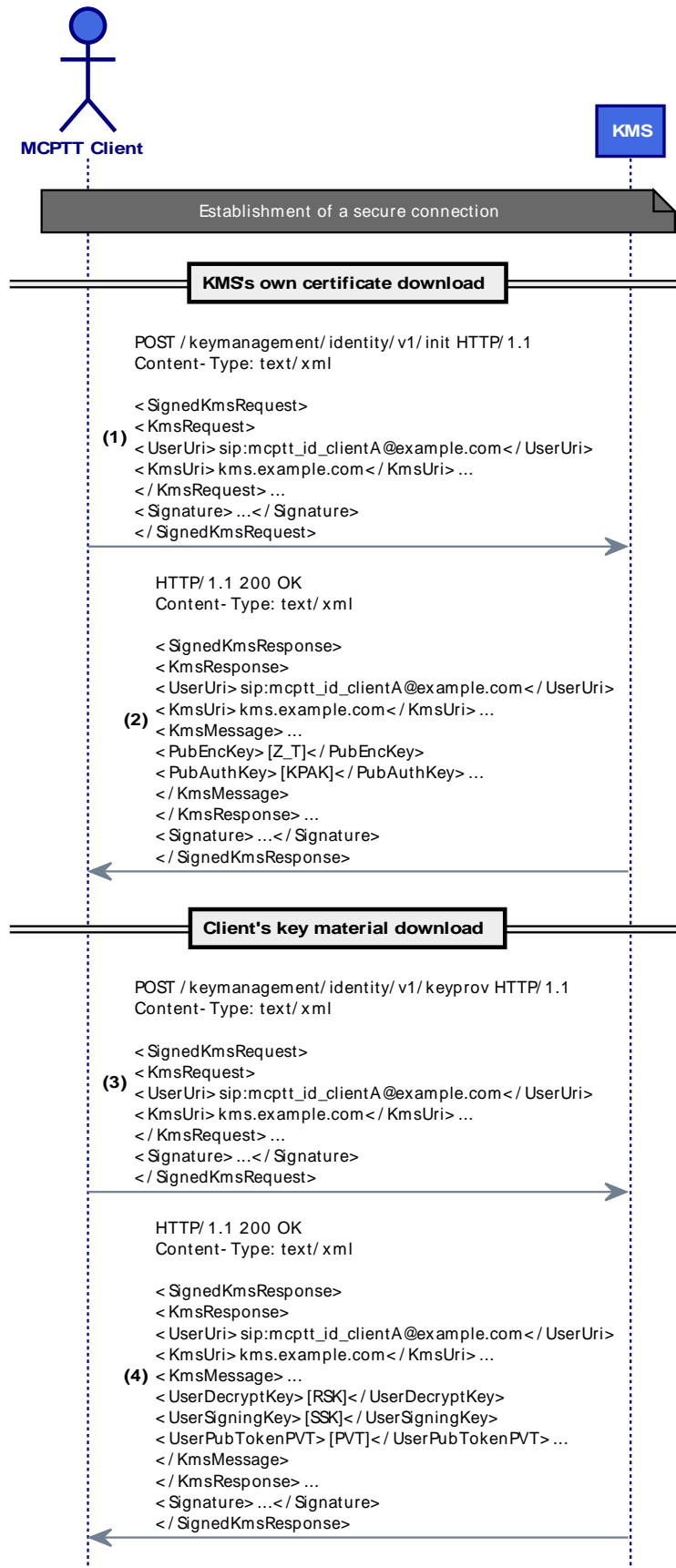


Figure 104: SEC/KEYMDOWNLOAD/WOPROXY/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 112: SEC/KEYMDOWNLOAD/WOPROXY/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	SEC/KEYMDOWNLOAD/WOPROXY/01		
<b>Test Objective</b>	Verify KMS certificate and MCPTT client's key material download		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• HTTP (see IETF RFC 7230 [38])</li> <li>• TLS (see IETF RFC 8446 [39])</li> <li>• SSL (see IETF RFC 6101 [40])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_KMS (clause 6.2)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Client previously authenticated in the IdMS or the Identity and Access Token have been received by other means</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	MCPTT Client A verifies that it has no key material or the key material has already expired
	2	check	Client establishes a secure connection with the KMS
	3	check	Client sends a HTTP POST request to obtain the KMS certificate
	4	check	HTTP POST request contains the access-token
	5	check	KMS responds with its own certificate
	6	check	Client receives KMS's own certificate
	7	check	Client sends a HTTP POST request to obtain its key material
	8	check	HTTP POST request contains the access-token
	9	check	KMS responds with the key material of client A
	10	check	Client receives its key material

### 7.10.5 Key material download from KMS to MCPTT server (CSC-9) without proxy [SEC/KEYMDOWNLOAD/WOPROXY/02]

This procedure is similar to the one described in clause 7.10.2 of the present document but without using an HTTP proxy in the connection path.

## Message Sequence Diagram

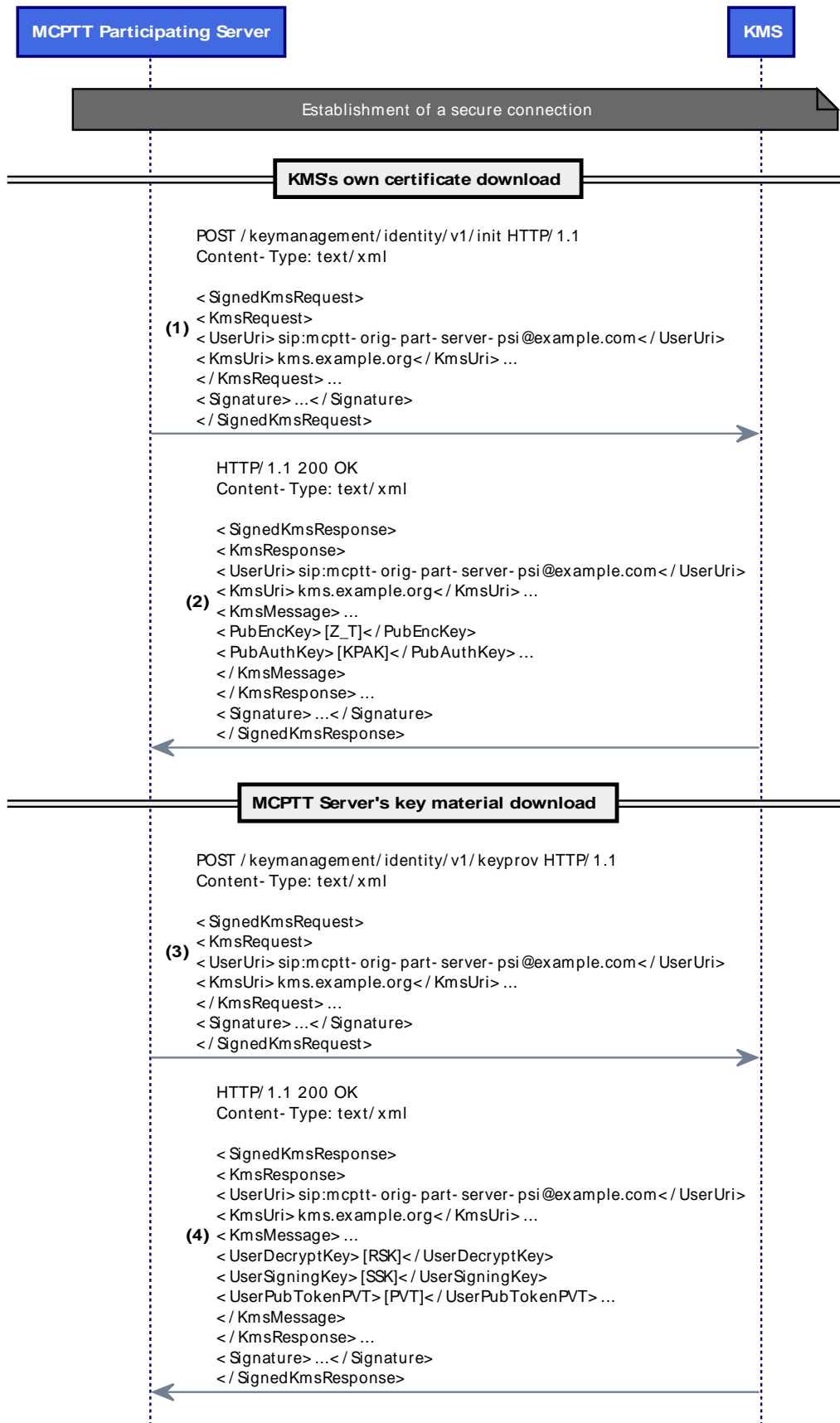


Figure 105: SEC/KEYMDOWNLOAD/WOPROXY/02 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 113: SEC/KEYMDOWNLOAD/WOPROXY/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	SEC/KEYMDOWNLOAD/WOPROXY/02		
<b>Test Objective</b>	Verify KMS certificate and MCPTT server's key material download		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• HTTP (see IETF RFC 7230 [38])</li> <li>• TLS (see IETF RFC 8446 [39])</li> <li>• SSL (see IETF RFC 6101 [40])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Part_KMS (clause 6.2)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	MCPTT server verifies that it has no key material or the key material has already expired
	2	check	MCPTT server establishes a secure connection with the KMS
	3	check	MCPTT server sends a HTTP POST request to obtain the KMS certificate
	4	check	HTTP POST request contains the access-token
	5	check	KMS responds with its own certificate
	6	check	MCPTT server receives KMS's own certificate
	7	check	MCPTT server sends a HTTP POST request to obtain its key material
	8	check	HTTP POST request contains the access-token
	9	check	KMS responds with the key material of client A
	10	check	MCPTT server receives its key material

### 7.10.6 Key material download from KMS to MCPTT GMS (CSC-10) without proxy [SEC/KEYMDOWNLOAD/WOPROXY/03]

This procedure is similar to the one described in clause 7.10.3 of the present document but without using an HTTP proxy in the connection path.



## Message Sequence Diagram

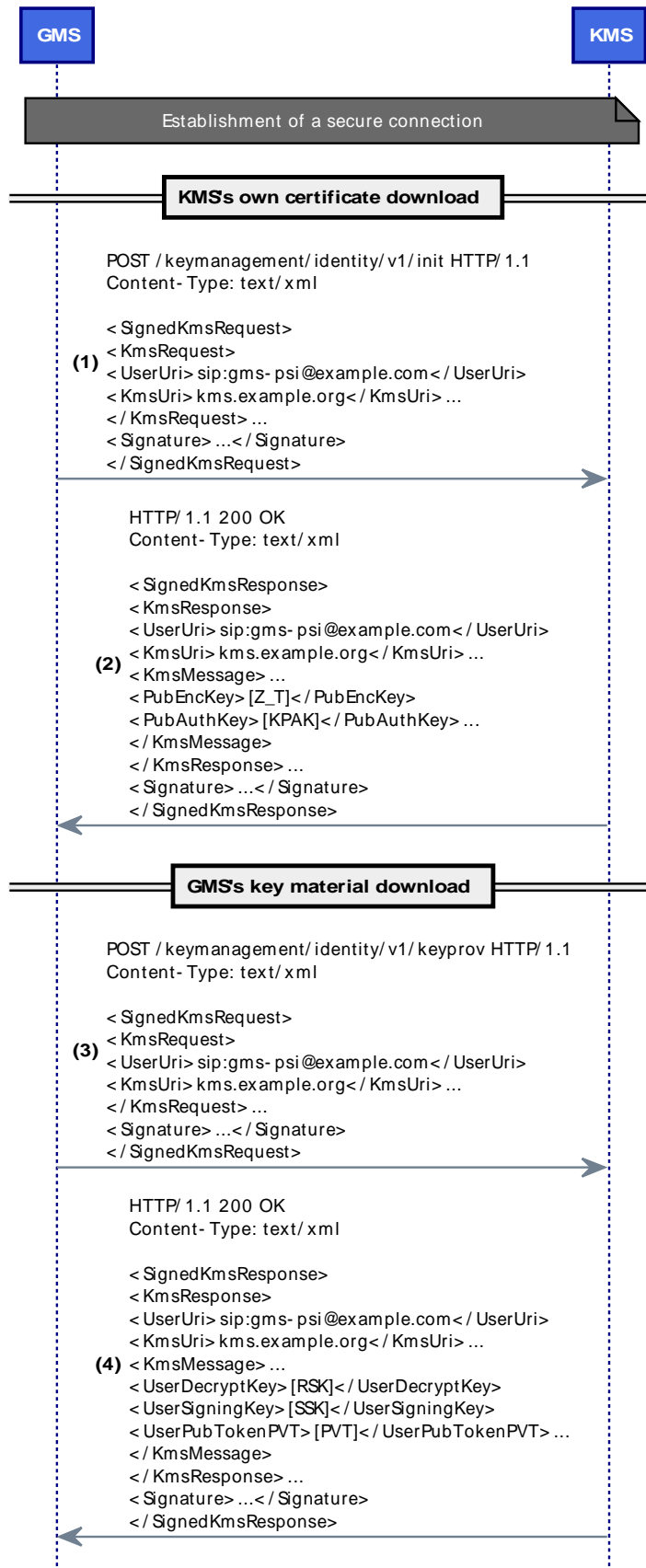


Figure 106: SEC/KEYMDOWNLOAD/WOPROXY/03 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 114: SEC/KEYMDOWNLOAD/WOPROXY/03 ITD**

Interoperability Test Description			
<b>Identifier</b>	SEC/KEYMDOWNLOAD/WOPROXY/03		
<b>Test Objective</b>	Verify KMS certificate and GMS' key material download		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• HTTP (see IETF RFC 7230 [38])</li> <li>• TLS (see IETF RFC 8446 [39])</li> <li>• SSL (see IETF RFC 6101 [40])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• GMS_KMS (clause 6.2)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	GMS verifies that it has no key material or the key material has already expired
	2	check	GMS establishes a secure connection with the KMS
	3	check	GMS sends a HTTP POST request to obtain the KMS certificate
	4	check	HTTP POST request contains the access-token
	5	check	KMS responds with its own certificate
	6	check	GMS receives KMS's own certificate
	7	check	GMS sends a HTTP POST request to obtain its key material
	8	check	HTTP POST request contains the access-token
	9	check	KMS responds with the key material of client A
	10	check	GMS receives its key material

### 7.10.7 Key management from MC client to MC server (CSK upload) [SEC/KEYDIST/CSK/01]

CSK keys are used by the MCPTT client to protect RTCP packets, floor control packets and also for the XML content confidentiality and integrity protection. The key is generated by the MCPTT client and distributed to the MCPTT participating server so that it can decrypt this information. CSK is sent to the participating server encoded in a MIKEY-SAKKE message which is included in the REGISTER message used for service authorization.

Assuming an IMS Core, the MCPTT Client registers and the S-CSCF sends a third-party registration. In this test case and associated diagram and message details assume the MCPTT User has previously authenticated with the IdMS and got the mcptt\_id and needed Access Token, so that it would be included in the mcptt-info body in the original REGISTER (see clauses 7.2.1 and 7.3.2 in ETSI TS 124 379 [9]). Additionally, the user has previously downloaded the key material from the KMS as described in clauses 7.10.1 or 7.10.4 and has generated the CSK key. The REGISTER message will contain a multipart body comprised of the mcptt-info body with the Access Token and MCPTT Client ID and an application/mikey part which contains an MIKEY-SAKKE I\_MESSAGE with the encoded CSK key constructed as described in clause E.4 in ETSI TS 133 180 [24] using the key material obtained from the KMS as described in clauses 7.10.1 or 7.10.4 of the present document. More details about the structure of this REGISTER message can be found in clause 7.2.1 in ETSI TS 124 379 [9].

Only CSK upload will be tested here following the procedure described in clauses 5.4 and 9.2.1 in ETSI TS 133 180 [24]. No CSK download procedure will be included in the present document. Neither confidentiality nor integrity protection of the mcptt-info content will be required in this test case (a specific XML content encryption test case has been included in clause 7.10.17 of the present document).

There is another alternative to upload the CSK using PUBLISH messages for service authorization and service settings. This would be a similar procedure to the one described in clause 7.4.3 of the present document, but including the application/mikey body in the PUBLISH message.

Message Sequence Diagram

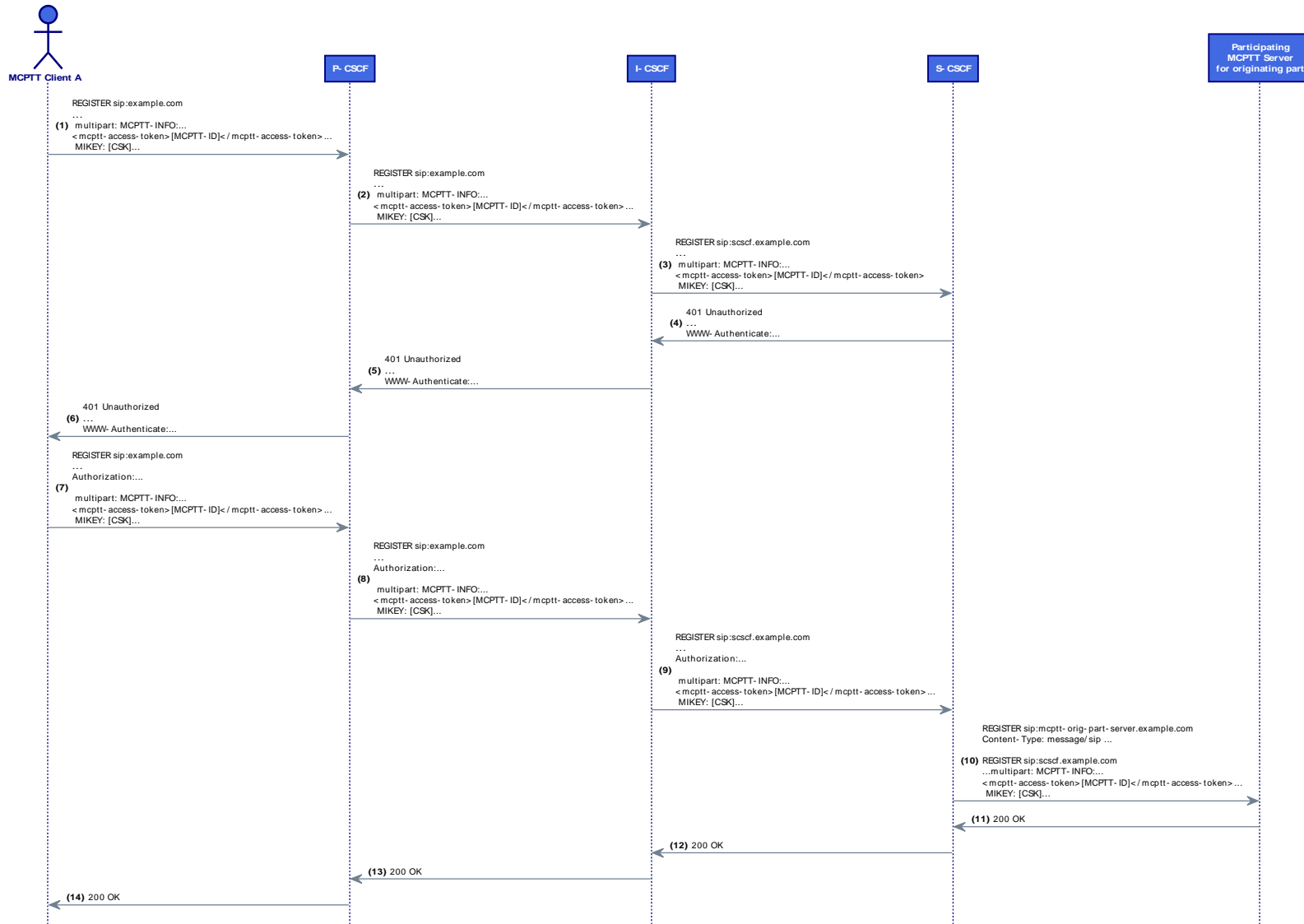


Figure 107: SEC/KEYDIST/CSK/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 115: SEC/KEYDIST/CSK/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	SEC/KEYDIST/CSK/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and CSK distribution		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_KMS, MCPTT-Client_REGREG (clause 6.2)</li> <li>• MCPTT-Part_KMS, MCPTT-Part_REGAUTH (clause 6.7)</li> <li>• IMS_3RDPARTYREGISTER</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> <li>• Client has previously obtained key material from KMS</li> <li>• MCPTT server has previously obtained key material from KMS</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) registers with its IMPU and MCPTT specific info mcptt-info
	2	check	REGISTER sent to the P-CSCF with mcptt-info body
	3	check	Body includes MIKEY_I_MESSAGE with CSK key
	4	check	REGISTER sent to the S-CSCF
	5	check	S-CSCF creates a 3 <sup>rd</sup> Party Register towards the participating and embeds the original REGISTER as body
	6	verify	User 1 correctly registered to the IMS Core and MCPTT participating. IMPU vs. mcptt_id binding and service authorization completed
	7	check	MCPTT participating stores client's CSK

## 7.10.8 Key management for group communications (GMK) [SEC/KEYDIST/GMK/01]

GMK keys are used by the MCPTT clients to protect RTP packets in MCPTT group calls. The GMK is generated by the GMS and distributed to the MCPTT clients so that they can encrypt and decrypt the RTP flow. GMK is generated by the GMS for each group and is sent to the members of the group encoded in MIKEY-SAKKE messages, which are included in NOTIFY messages. The client subscribes to the MCPTT-GKTP document separately or together with the MCPTT group subscription (only separate subscription will be analysed here). SUBSCRIBE messages have multipart bodies comprised of application/resource-lists+xml and application/vnd.3gpp.mcptt-info+xml parts. Resource-lists part includes the URL of the MCPTT-GKTP document and the mcptt-info part contains the MCPTT Group ID of the group from which the client wants to obtain its GMK. NOTIFY messages sent from GMS have an xcap-diff content, which has been extended to contain MIKEY-SAKKE I\_MESSAGES with the encoded GMK key. The structure of MIKEY-SAKKE messages for GMK distribution is described in clause E.2 in ETSI TS 133 180 [24]. More details about how to compose SUBSCRIBE and NOTIFY messages can be found in clause 6.3.13 in ETSI TS 124 481 [11].

The test case assumes that the GMS has previously downloaded the key material from the KMS as described in clauses 7.10.3 or 7.10.6.

## Message Sequence Diagram

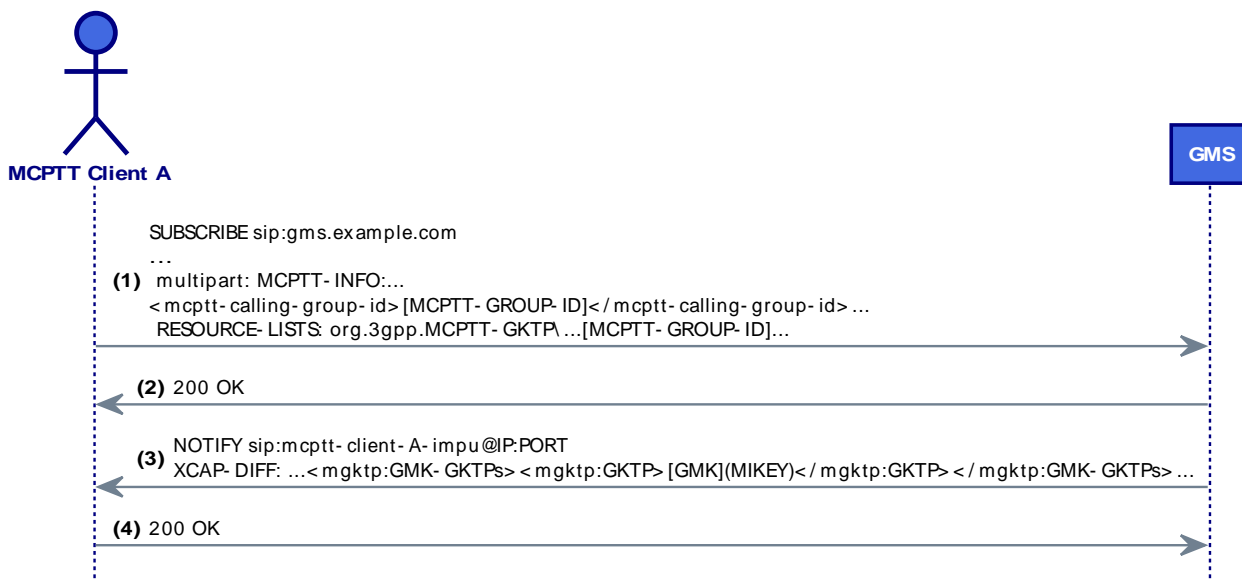


Figure 108: SEC/KEYDIST/GMK/01 Message Sequence

## Message Details

Trace Pending

## Interoperability Test Description

Table 116: SEC/KEYDIST/GMK/01 ITD

Interoperability Test Description			
<b>Identifier</b>	SEC/KEYDIST/GMK/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and GMK distribution		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9] and ETSI TS 124 481 [11])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_KMS, MCPTT-Client_ONN-MCPTT-CALL (clause 6.2)</li> <li>• GMS_KMS</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> <li>• Client has previously obtained key material from KMS</li> <li>• GMS has previously obtained key material from KMS</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	check	MCPTT client sends a SIP SUBSCRIBE to the GMS
	2	check	GMS processes the SUBSCRIBE, behaves as notifier and returns the xcap-diff document with the MIKEY-SAKKE message including the GMK
	3	check	MCPTT client parses the xcap-diff document and extracts the MIKEY-SAKKE message
	4	verify	MCPTT client correctly obtains the GMK from the MIKEY-SAKKE message

## 7.10.9 Key management from MC server to MC client (Key download MuSiK) [SEC/KEYDIST/MUSIK/01]

MuSiK keys are used by the MCPTT servers to protect RTCP packets sent in MBMS. MuSiK is generated by the participating MCPTT server and distributed to the MCPTT client so that it can decrypt those packets. The key is sent to the clients encoded in MIKEY-SAKKE messages, which are added to SIP MESSAGES for eMBMS subchannel announcements (see clause 7.6). These messages will have multipart bodies now. Apart from sending mbms-usage-info, they will also include an application/mikey body with the encoded MuSiK key. The structure of MIKEY-SAKKE messages for MuSiK distribution is described in clause E.4 of ETSI TS 133 180 [24]. More details about how to compose SIP MESSAGE messages for MuSiK distribution can be found in clause 14.2.2.5 of ETSI TS 124 379 [9]. Test Case assume that both the MCPTT client and MCPTT server have previously downloaded the key material from the KMS as described in clauses 7.10.1, 7.10.4, 7.10.2 and 7.10.5 respectively.

### Message Sequence Diagram



**Figure 109: SEC/KEYDIST/MUSIK/01 Message Sequence**

### Message Details

Trace Pending

## Interoperability Test Description

Table 117: SEC/KEYDIST/MUSIK/01 ITD

Interoperability Test Description			
<b>Identifier</b>	SEC/KEYDIST/MUSIK/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MuSiK distribution		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_KMS, MCPTT-Client_EMBMS</li> <li>• MCPTT-Client_ONNMCPTT-CALL (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_GCSE (clause 6.7)</li> <li>• BM-SC_GCSE</li> <li>• EPS_EMBMS</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> <li>• Client has previously obtained key material from KMS</li> <li>• MCPTT server has previously obtained key material from KMS</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	MCPTT participating server sends SIP MESSAGE to MCPTT client with the MIKEY-SAKKE message including the MuSiK
	2	check	MCPTT client parses the content and extracts the MIKEY-SAKKE message
	3	verify	MCPTT client correctly obtains the MuSiK from the MIKEY-SAKKE message

### 7.10.10 Encryption of MCPTT private calls (use of derived encryption keys from PCK for the audio and CSK for floor control and RTCP reports) [SEC/ENCRYPTION/PRIVATE/01]

This test assumes that both media and MCPTT signalling protection has been configured in the system. Only one type of MCPTT private call will be tested to demonstrate the encryption of RTP/RTCP and XML contents and URI attributes: an on-demand on-network private call with automatic commencement and floor control (a non-protected version of this test case can be found in clause 7.2.15). The following conditions should be met to be able to complete this test:

- Both MCPTT clients should have downloaded their key material from KMS (see clause 7.10.1 or 7.10.4).
- Both MCPTT clients should have distributed their CSK keys to the corresponding participating server by using either REGISTER or PUBLISH requests (see clause 7.10.7).
- MCPTT participating servers should have downloaded their key material from KMS (see clause 7.10.2 or 7.10.5).
- SPK keys have been configured in server pairs.
- The caller generates a PCK key for RTP encryption and builds a MIKEY-SAKKE I\_MESSAGE for the callee as described in clause E.3 of ETSI TS 133 180 [24] (see note 1).
- The callee is able to decode the PCK key from the MIKEY message.
- All encryption keys are derived using the corresponding methods (PRF functions for RTP/RTCP encryption and KDF functions for XML encryption) as described in ETSI TS 133 180 [24] in each node.

A default security profile will be used for the encryption of the RTP flow as described in clause E.3.2 in ETSI TS 133 180 [24]. The use of encrypted audio will be indicated with the use of the RTP/SAVP profile in the SDP of the initial INVITE request.

MCPTT signalling encryption is applied to the XML contents of mcptt-info and resource-lists bodies of the INVITE request that establishes the private call (see clause 7.10.13).

NOTE 1: No specific clause for describing the PCK key distribution procedure has been included in the present document. The MIKEY-SAKKE L\_MESSAGE for PCK distribution are included in the SDP part of the INVITE request in an "a=key-mgmt:mikey" attribute. More details on how to include this information in INVITE messages can be found in clauses 4.7.1 and 6.2.1 in ETSI TS 124 379 [9].

NOTE 2: If it is not possible to test the distribution of the different keys, a test with fixed keys could be considered.

### Message Sequence Diagram



Figure 110: SEC/ENCRYPTION/PRIVATE/01 Message Sequence

### Message Details

Trace Pending



## Interoperability Test Description

Table 118: SEC/ENCRYPTION/PRIVATE/01 ITD

Interoperability Test Description			
<b>Identifier</b>	SEC/ENCRYPTION/PRIVATE/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, private call MCPTT signalling protection and RTP/RTCP encryption		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_KMS, MCPTT-Client_ONN-MCPTT-CALL</li> <li>MCPTTClient_AMR-WB, MCPTT-Client_MCPTT-FC</li> <li>MCPTT-Client_ONNSEC-XML, MCPTT-Client_ONN-SEC-MEDIA (clause 6.2)</li> <li>MCPTT-Part_KMS, MCPTT-Part_ONN-MCPTT-CALL</li> <li>MCPTTPart_MCPTT-FC, MCPTT-Part_ONN-SEC-XML</li> <li>MCPTT-Part_ONNSEC-MEDIA (clause 6.7)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_ONN-SEC-XML</li> <li>MCPTT-Ctrl_ONN-SEC-MEDIA (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS</li> <li>Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> <li>XML protection and RTP/RTCP protection has been configured in the system</li> <li>CSK keys have been distributed to participating servers</li> <li>SPK keys have been configured per server pairs</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls User 2 (mcptt_id_clientB@example.com)
	2	check	Dialog creating INVITE received at the MCPTT participating server of User 1
	3	check	SDP indicates RTP/SAVP profile and mcptt-info and rls bodies are encrypted
	4	check	The participating server adapts the mcptt-info accordingly and creates an INVITE to the controlling server
	5	check	SDP indicates RTP/SAVP profile and mcptt-info and rls bodies are encrypted
	6	check	The controlling server check permissions and forward the INVITE to the participating server of the callee
	7	check	SDP indicates RTP/SAVP profile and mcptt-info body is encrypted
	8	check	Upon arrival of the INVITE adapted by the terminating participating function at User 2 the call is automatically taken
	9	verify	Call connected and encrypted media flows exchanged

### 7.10.11 Encryption of MCPTT group calls (use of derived encryption keys from GMK for the audio and CSK for floor control and RTCP reports) [SEC/ENCRYPTION/GROUP/01]

This test assumes that both media and MCPTT signalling protection has been configured in the system. Only one type of MCPTT group call will be tested to demonstrate the encryption of RTP/RTCP and XML contents and URI attributes: an on-demand on-network prearranged group call (a non-protected version of this test case can be found in clause 7.2.1). The following conditions should be met to be able to complete this test:

- All MCPTT clients should have downloaded their key material from KMS (see clause 7.10.1 or 7.10.4).
- All MCPTT clients should have distributed their CSK keys to the corresponding participating server by using either REGISTER or PUBLISH requests (see clause 7.10.7).

- MCPTT participating servers should have downloaded their key material from KMS (see clause 7.10.2 or 7.10.5).
- SPK keys have been configured in server pairs.
- All MCPTT clients should have obtained the GMK of the called group from the GMS (see clause 7.10.11).
- All encryption keys are derived using the corresponding methods (PRF functions for RTP/RTCP encryption and KDF functions for XML encryption) as described in ETSI TS 133 180 [24] in each node.

A default security profile will be used for the encryption of the RTP flow as described in clause E.2.2 in ETSI TS 133 180 [24]. The use of encrypted audio will be indicated with the use of the RTP/SAVP profile in the SDP of the initial INVITE request.

MCPTT signalling encryption is applied to the XML contents of mcptt-info body of the INVITE request that establishes the group call (see clause 7.10.14).

NOTE: If it is not possible to test the distribution of the different keys, a test with fixed keys could be considered.

Message Sequence Diagram

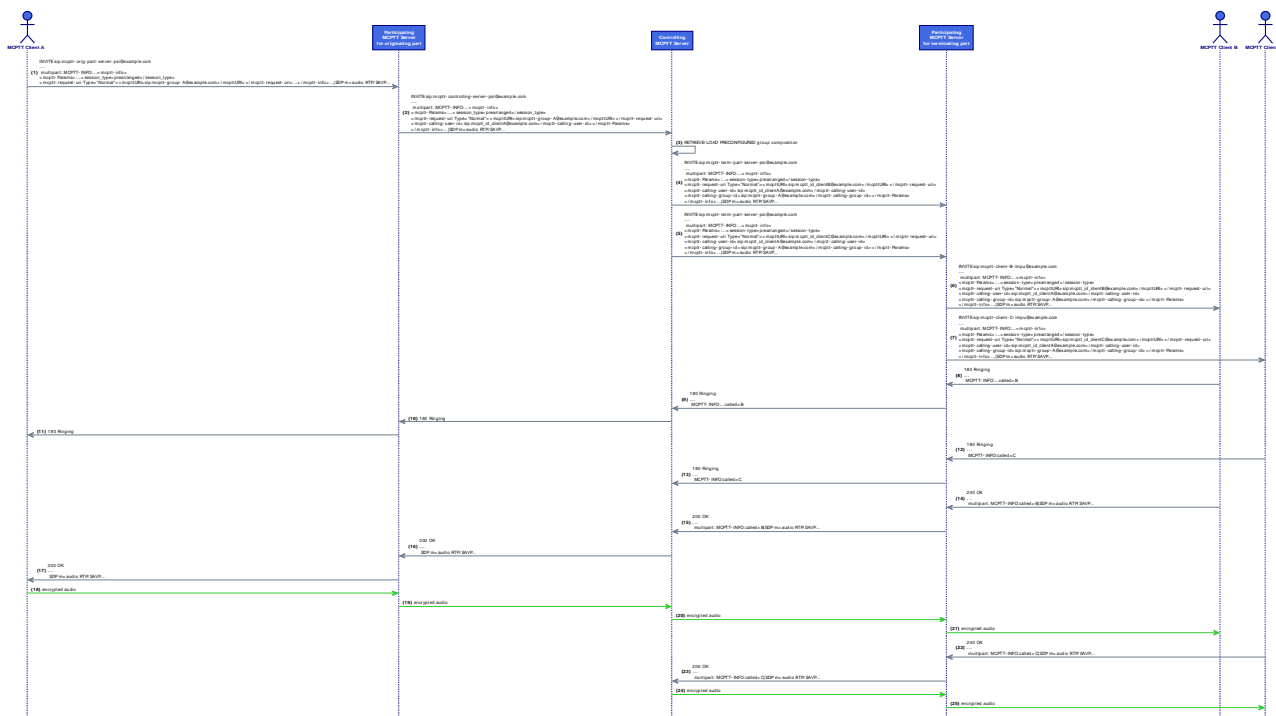


Figure 111: SEC/ENCRYPTION/GROUP/01 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 119: SEC/ENCRYPTION/GROUP/01 ITD

Interoperability Test Description			
<b>Identifier</b>	SEC/ENCRYPTION/GROUP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, group call MCPTT signalling protection and RTP/RTCP encryption		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC</li> <li>MCPTTClient_ONN-SEC-XML, MCPTT-Client, ONN-SEC-MEDIA (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>MCPTTPart_MCPTT-FC, MCPTT-Part_ONN-SEC-XML</li> <li>MCPTT-Part_ONNSEC-MEDIA (clause 6.7)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL</li> <li>MCPTTCtrl_ONN-SEC-XML, MCPTT-Ctrl_ONN-SEC-MEDIA (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS</li> <li>Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> <li>XML protection and RTP/RTCP protection has been configured in the system</li> <li>GMK keys have been distributed to the clients</li> <li>CSK keys have been distributed to participating servers</li> <li>SPK keys have been configured per server pairs</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls mcptt-group-A
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS
	3	check	SDP indicates RTP/SAVP profile and mcptt-info body is encrypted
	4	check	INVITE received at the MCPTT controlling server
	5	check	SDP indicates RTP/SAVP profile and mcptt-info body is encrypted
	6	check	The MCPTT controlling server loads the affiliated members of the mcptt-group-A (either preconfigured or retrieved from the GMS) and creates an INVITE per each of the "n" members
	7	check	SDP indicates RTP/SAVP profile and mcptt-info body is encrypted
	8	check	"n" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	9	check	SDP indicates RTP/SAVP profile and mcptt-info body is encrypted
	10	check	"n" INVITEs received at the affiliated mcptt_id_clientX
	11	check	SDP indicates RTP/SAVP profile and mcptt-info body is encrypted
	12	check	"n" SIP dialogs established
	13	verify	Call connected and multiple encrypted media flows exchanged

### 7.10.12 Encryption of MCPTT group calls using eMBMS (use of derived encryption keys from MuSIK for the floor control and MSCCK for eMBMS control) [SEC/ENCRYPTION/GROUPEMBMS/01]

This test is the continuation of the protected group call described in test case 7.10.11, but after establishing the MBMS bearers dynamically (see clause 7.6.3 or 7.6.4). The following conditions should be met to be able to complete this test:

- A protected prearranged MCPTT group call is ongoing (see clause 7.10.11).
- All MCPTT clients should have downloaded their key material from KMS (see clause 7.10.1 or 7.10.4).

- The MCPTT participating server should have downloaded its key material from KMS (see clause 7.10.2 or 7.10.5).
- All MCPTT clients should have distributed their CSK keys to the corresponding participating server by using either REGISTER or PUBLISH requests (see clause 7.10.7).
- The MCPTT participating server generates a MSCCK key for the encryption of eMBMS subchannel control packets and builds a MIKEY-SAKKE I\_MESSAGE for the client as described in annex H in ETSI TS 133 180 [24] (see note 1).
- All MCPTT clients are able to decode the MSCCK key from the MIKEY message.
- The MCPTT participating server generates a MuSiK key for the encryption of RTCP packets sent via eMBMS and distributes it as described in clause 7.10.9.
- All encryption keys are derived using the corresponding methods (PRF functions for RTP/RTCP encryption and KDF functions for XML encryption) as described in ETSI TS 133 180 [24] in each node.

A default security profile will be used for the encryption of the RTP flow as described in clause E.2.2 in ETSI TS 133 180 [24]. The use of encrypted audio will be indicated with the use of the RTP/SAVP profile in the SDP of the initial INVITE request.

NOTE 1: No specific clause for describing the MSCCK key distribution procedure has been included in the present document. The MIKEY-SAKKE I\_MESSAGE for MSCCK distribution are included in the SDP part of the SIP MESSAGE request for eMBMS bearer announcements in an "a=key-mgmt:mikey" attribute. More details on how to include this information INVITE message can be found in clauses 4.7.1 and 6.2.1 in ETSI TS 124 379 [9].

NOTE 2: If it is not possible to test the distribution of the different keys, a test with fixed keys could be considered.

Message Sequence Diagram

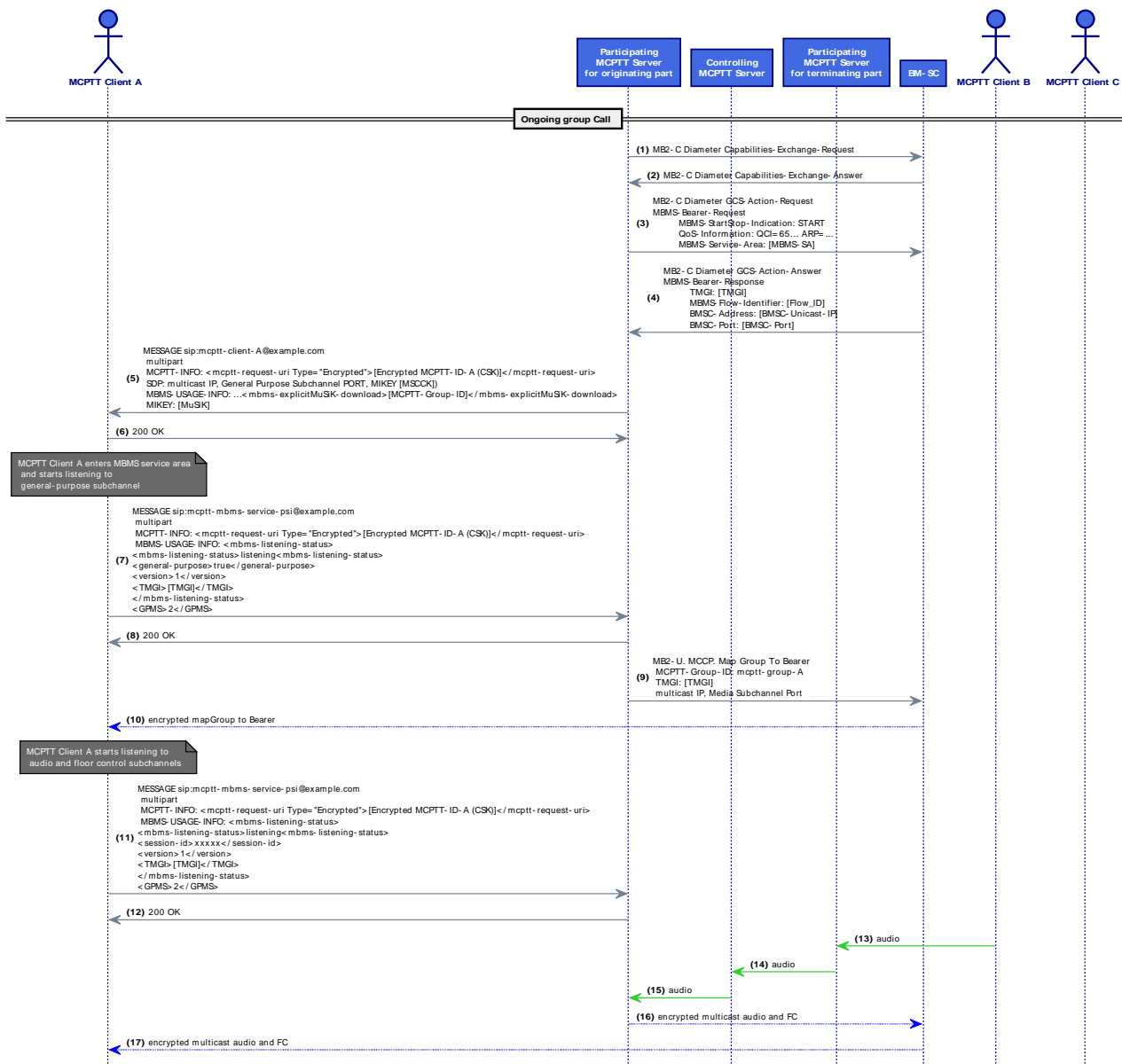


Figure 112: SEC/ENCRYPTION/GROUPEMBMS/01 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 120: SEC/ENCRYPTION/GROUPEMBMS/01 ITD

Interoperability Test Description			
<b>Identifier</b>	SEC/ENCRYPTION/GROUPEMBMS/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC</li> <li>• MCPTTClient_ONN-SEC-XML, MCPTT-Client, ONN-SEC-MEDIA (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTTPart_MCPTT-FC, MCPTT-Part_ONN-SEC-XML</li> <li>• MCPTT-Part_ONNSEC-MEDIA</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL</li> <li>• MCPTTCtrl_ONN-SEC-XML, MCPTT-Ctrl_ONN-SEC-MEDIA (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> <li>• Ongoing prearranged group call</li> <li>• XML protection and RTP/RTCP protection has been configured in the system</li> <li>• GMK keys have been distributed to the clients</li> <li>• CSK keys have been distributed to participating servers</li> <li>• SPK keys have been configured per server pairs</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	MCPTT Participating requests the activation of a MBMS bearer with no TMGI
	2	stimulus	Upon successful MBMS bearer activation MCPTT participating notifies users using SIP MESSAGE the general purpose subchannel port where the multicast signalling will be sent to
	3	check	SIP MESSAGE mcptt-info body is encrypted, MSCCK key included in SDP and MuSiK key in MIKEY message
	4	stimulus	Users notify using SIP MESSAGE that they are listening to the general purpose subchannel
	5	stimulus	Participating uses Map Group To Bearer to start sending Floor Control/Audio packets over multicast
	6	check	Map Group To Bearer is encrypted with MSCCK
	7	check	Users successfully listening to multicast group call with encrypted audio

### 7.10.13 XML contents encryption in MCPTT private calls (mcptt-info and resource-lists) [SEC/XMLENCRYPT/PRIVATE/01]

This test case describes how XML encryption can be applied to the establishment procedure of MCPTT calls. It specifically analyses the case of private calls with floor control in automatic commencement mode. The same procedure with non-encrypted XML bodies can be found in clause 7.2.17 of the present document.

In order to establish a private call, the MCPTT client sends an INVITE request with the SDP, the mcptt-info body describing the type of call and a resource-lists body containing the MCPTT ID of the user it wants to contact with. The contents of the mcptt-info will be protected with MCPTT client's CSK as following xmlenc procedures as described in clause 9.3.4.2 of ETSI TS 133 180 [24]. The callee URI contained in resource-lists body will be also protected with MCPTT client's CSK, but using the XML URI attribute encryption described in clause 9.3.4.3 of ETSI TS 133 180 [24].

Encryption between each pair of servers is done with the previously configured SPK, whereas the information inside the final INVITE to the callee part will be encrypted with the CSK of the callee part.

The procedure to obtain the final XML encryption key from CSK and SPK keys is included in clause F.1.4 of ETSI TS 133 180 [24].

Message Sequence Diagram

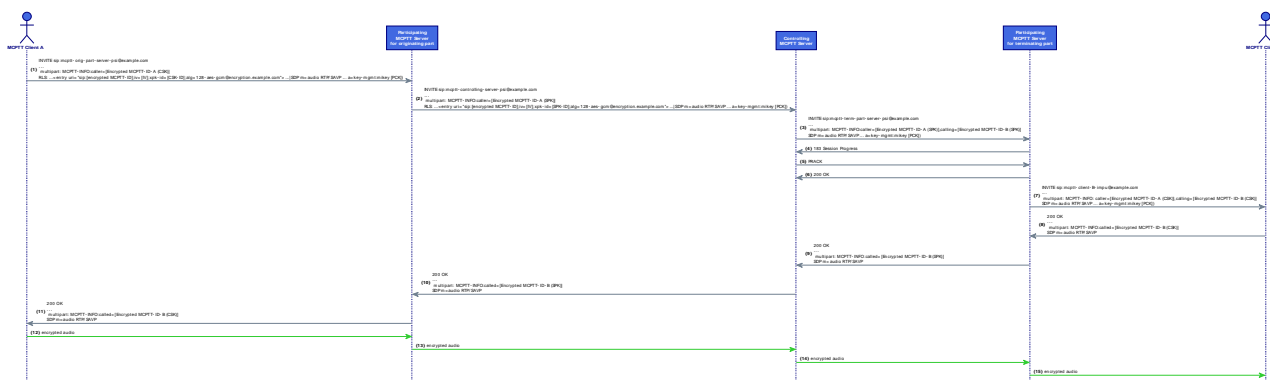


Figure 113: SEC/XMLENCRYPT/PRIVATE/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 121: SEC/XMLENCRYPT/PRIVATE/01 ITD

Interoperability Test Description	
Identifier	SEC/XMLENCRYPT/PRIVATE/01
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and encryption of XML contents
Configuration(s)	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
References	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPTT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>
Applicability	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL</li> <li>MCPTT-Client_ONN-SEC-XML, MCPTT-Client_KMS (clause 6.2)</li> <li>MCPTT-Part_AFFIL, MCPTT-Part_ONN-SEC-XML (clause 6.7)</li> <li>MCPTT-Ctrl_AFFIL, MCPTT-Ctrl_ONN-SEC-XML (clause 6.8)</li> </ul>
Pre-test conditions	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS</li> <li>Client has previously obtained key material from KMS</li> <li>Client's CSK has been already sent to the participating server</li> <li>Shared SPK key has been already configured in servers</li> <li>Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> </ul>

Interoperability Test Description			
Test Sequence	Step	Type	Description
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls User 2 (mcptt_id_clientB@example.com)
	2	check	XML contents of mcptt-info and resource-lists are encrypted with caller's CSK
	3	check	Dialog creating INVITE received at the MCPTT participating server of User 1
	4	check	The participating server adapts the mcptt-info accordingly and creates an INVITE to the controlling server
	5	check	XML contents of mcptt-info and resource-lists are encrypted with SPK
	6	check	The controlling server check permissions and forward the INVITE to the participating server of the callee
	7	check	XML contents of mcptt-info are encrypted with SPK
	8	check	Upon arrival of the INVITE adapted by the terminating participating function at User 2 the call is automatically taken
	9	check	XML contents of mcptt-info are encrypted with callee's CSK
	10	verify	Call connected and media flows exchanged

### 7.10.14 XML contents encryption in MCPTT group calls (mcptt-info) [SEC/XMLENCRYPT/GROUP/01]

This procedure is similar to the one described in clause 7.10.13 but applied to prearranged group calls. In this case the mcptt-info body with the called MCPTT group ID will be just included. Encryption keys derived from CSKs will be used between the participating servers and MCPTT clients and those derived from SPKs between each server pair, just like in private calls. The same procedure with non-encrypted XML bodies can be found in clause 7.2.1.

#### Message Sequence Diagram

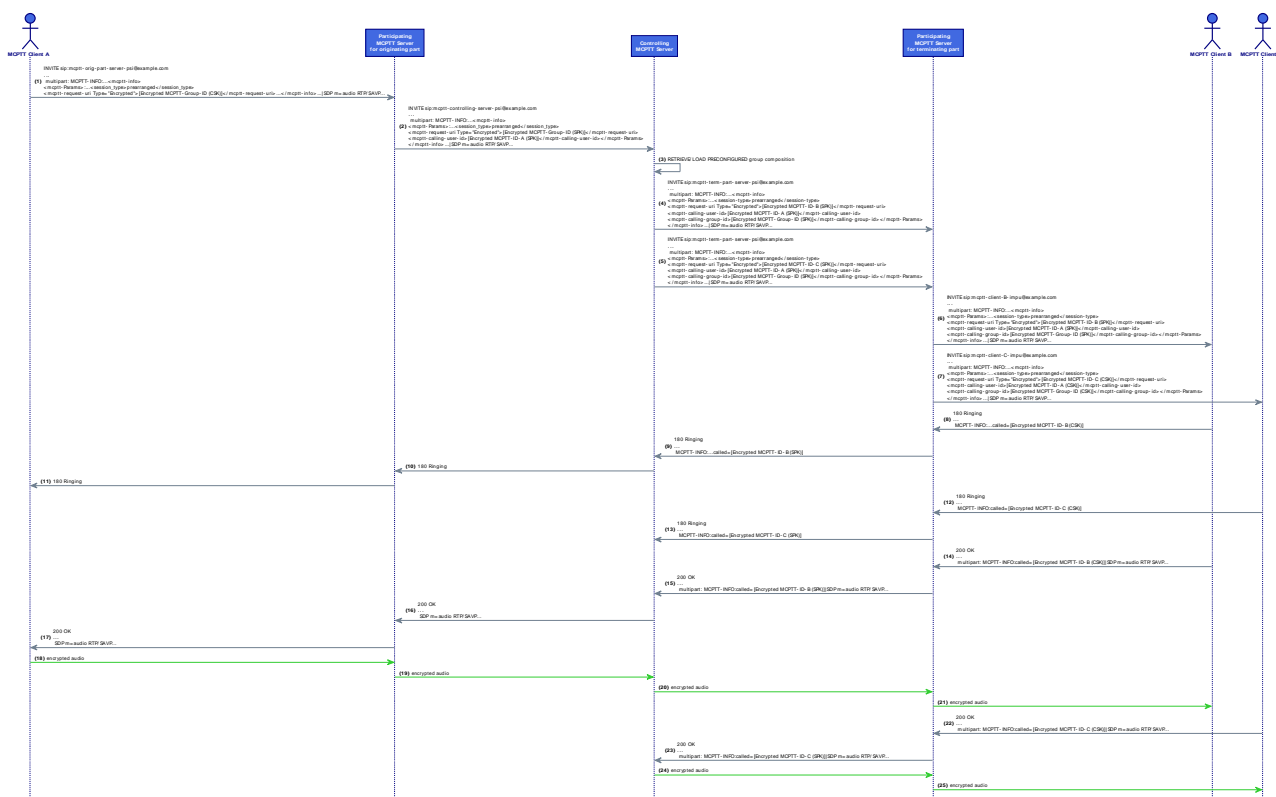


Figure 114: SEC/XMLENCRYPT/GROUP/01 Message Sequence



Message Details

Trace Pending

Interoperability Test Description

**Table 122: SEC/XMLENCRYPT/GROUP/01 ITD**

<b>Interoperability Test Description</b>			
<b>Identifier</b>	SEC/XMLENCRYPT/GROUP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC</li> <li>• MCPTTClient_ONN-SEC-XML, MCPTT-Client_KMS(clause 6.2)</li> <li>• MCPTTPart_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTTPart_MCPTT-FC, MCPTT-Part_ONN-SEC-XML (clause 6.7)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL</li> <li>• MCPTTCtrl_ONN-SEC-XML (clause 6.8)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Client has previously obtained key material from KMS</li> <li>• Client's CSK has been already sent to the participating server</li> <li>• Shared SPK key has been already configured in servers</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls mcptt-group-A
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS
	3	check	XML contents in mcptt-info body are encrypted with CSK
	4	check	INVITE received at the MCPTT controlling server
	5	check	XML contents in mcptt-info body are encrypted with SPK
	6	check	The MCPTT controlling server loads the affiliated members of the mcptt-group-A (either preconfigured or retrieved from the GMS) and creates an INVITE per each of the "n" members
	7	check	"n" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	8	check	XML contents in mcptt-info body are encrypted with SPK
	9	check	"n" INVITEs received at the affiliated mcptt_id_clientX
	10	check	XML contents in mcptt-info body are encrypted with CSK
	11	check	"n" SIP dialogs established
	12	verify	Call connected and multiple media flows exchanged

### 7.10.15 XML contents encryption in affiliation procedure [SEC/XMLENCRYPT/AFFIL/01]

This test case describes how XML encryption can be applied to two affiliation procedures: subscription to own affiliation changes and own affiliation status change. The same procedures with non-encrypted XML bodies can be found in clauses 7.7.1 and 7.7.3 of the present document. A registered MCPTT User subscribes to its affiliation by following clauses 9.2.1.3 and 9.2.2.2.4 in ETSI TS 124 379 [9]. The MCPTT Client sends a SIP SUBSCRIBE message setting as Request-URI the public service identity identifying the originating participating MCPTT function serving the MCPTT user and an application/vnd.3gpp.mcptt-info+xml MIME body. The contents of the application/vnd.3gpp.mcpttinfo+xml MIME body will be encrypted with MCPTT client's CSK as described in clause 9.3.4.2 in ETSI TS 133 180 [24]. The MCPTT client will receive a NOTIFY message with the current affiliation status of the groups. If this NOTIFY message contains any affiliation information, it will be also encrypted using CSK.

After that, the MCPTT Client submits an affiliation status change triggered by the MCPTT User itself (clauses 9.2.1.2 and 9.2.2.2.3 in ETSI TS 124 379 [9]). In order to do so it will create a SIP PUBLISH request including both an mcptt-info MIME body with the targeted mcptt\_id and an application/pidf+xml MIME body indicating per-user affiliation information. Again, the contents of the application/vnd.3gpp.mcpttinfo+xml MIME body will be encrypted with MCPTT client's CSK as described in clause 9.3.4.2 in ETSI TS 133 180 [24]. The URIs contained in application/pidf+xml body will be also encrypted with MCPTT client's CSK, but using the XML URI attribute encryption described in clause 9.3.4.3 in ETSI TS 133 180 [24].

The MCPTT participating server will be able to decode the encrypted contents using the client's CSK. How this key is distributed to the MCPTT participating server can be found in clause 7.10.7.

SUBSCRIBE, PUBLISH or NOTIFY messages exchanged between the MCPTT controlling server and the MCPTT participating server will also include encrypted XML content and URI attributes, but instead of using the CSK for the encryption the servers will use a previously configured key called SPK. How this key is configured in both servers is out of scope of the MCPTT standard as stated in ETSI TS 133 180 [24].

Message Sequence Diagram

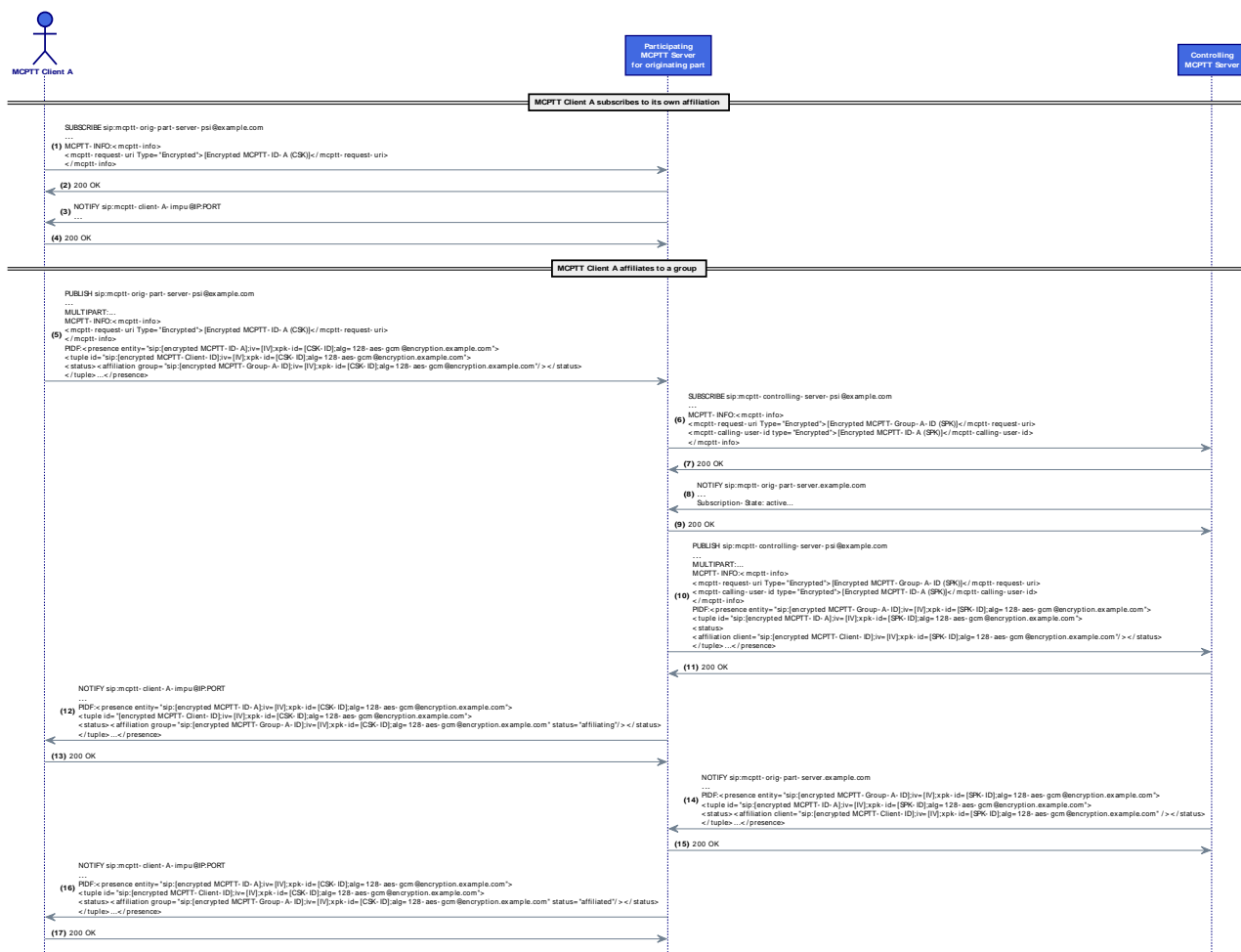


Figure 115: SEC/XMLENCRYPT/AFFIL/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 123: SEC/XMLENCRYPT/AFFIL/01 ITD

Interoperability Test Description	
<b>Identifier</b>	SEC/XMLENCRYPT/AFFIL/01
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and XML encryption
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL</li> <li>• MCPTT-Client_ONN-SEC-XML, MCPTT-Client_KMS (clause 6.2)</li> <li>• MCPTT-Part_AFFIL, MCPTT-Part_ONN-SEC-XML (clause 6.7)</li> <li>• MCPTT-Ctrl_AFFIL, MCPTT-Ctrl_ONN-SEC-XML (clause 6.8)</li> </ul>

Interoperability Test Description			
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• Client has previously obtained key material from KMS</li> <li>• Client's CSK has been already sent to the participating server</li> <li>• Shared SPK key has been already configured in servers</li> <li>• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) sends an affiliation subscription (SIP SUBSCRIBE) request to its MCPTT originating participating server
	2	check	XML contents of mcptt-info are encrypted with CSK
	3	stimulus	The MCPTT originating participating server forwards the SUBSCRIBE to the controlling server
	4	check	XML contents of mcptt-info are encrypted with SPK
	5	stimulus	The MCPTT controlling server sends a NOTIFY related to the subscription to the participating server
	6	check	URI attributes of pidf body are encrypted with SPK
	7	check	Affiliation information is correctly received at the MCPTT Client upon proper NOTIFY
	8	check	URI attributes of pidf body are encrypted with CSK
	9	stimulus	User 1 (mcptt_id_clientA@example.com) sends an affiliation change (SIP PUBLISH) request to its MCPTT originating participating server with the targeted user's mcptt_id in the <mcptt-request-uri> field
	10	check	XML contents of mcptt-info are encrypted with CSK
	11	check	URI attributes of pidf body are encrypted with CSK
	12	stimulus	The MCPTT originating participating server SUBSCRIBES to the controlling for the request group
	13	check	XML contents of mcptt-info are encrypted with SPK
	14	stimulus	The MCPTT controlling server NOTIFYes user's current status
	15	check	URI attributes of pidf body are encrypted with SPK
	16	stimulus	The MCPTT participating server PUBLISHes the new affiliation status to the request (and already) subscribed group
	17	check	XML contents of mcptt-info are encrypted with SPK
	18	check	URI attributes of pidf body are encrypted with SPK
	19	stimulus	The MCPTT controlling server sends a NOTIFY related to the subscription to the participating server
	20	check	URI attributes of pidf body are encrypted with SPK
	21	check	Affiliation information is correctly received at the MCPTT Client upon proper NOTIFY forwarding by its part
	22	check	URI attributes of pidf body are encrypted with CSK

### 7.10.16 XML contents encryption in location procedure [SEC/XMLENCRYPT/LOC/01]

Upon some time/distance/multicast-area related trigger, the MCPTT Client generates a Location Report. Such Report will be sent with a SIP MESSAGE request in accordance as described in clause 13.2.4 in ETSI TS 124 379 [9]. Some fields in the Location Report will be encrypted with client's CSK key such as latitude, longitude, cell IDs, multicast area IDs, etc. How this key is distributed to the MCPTT participating server can be found in clause 7.10.7. Encryption mechanisms for XML bodies in MCPTT standard are described in clause 9.3 of ETSI TS 133 180 [24].

## Message Sequence Diagram

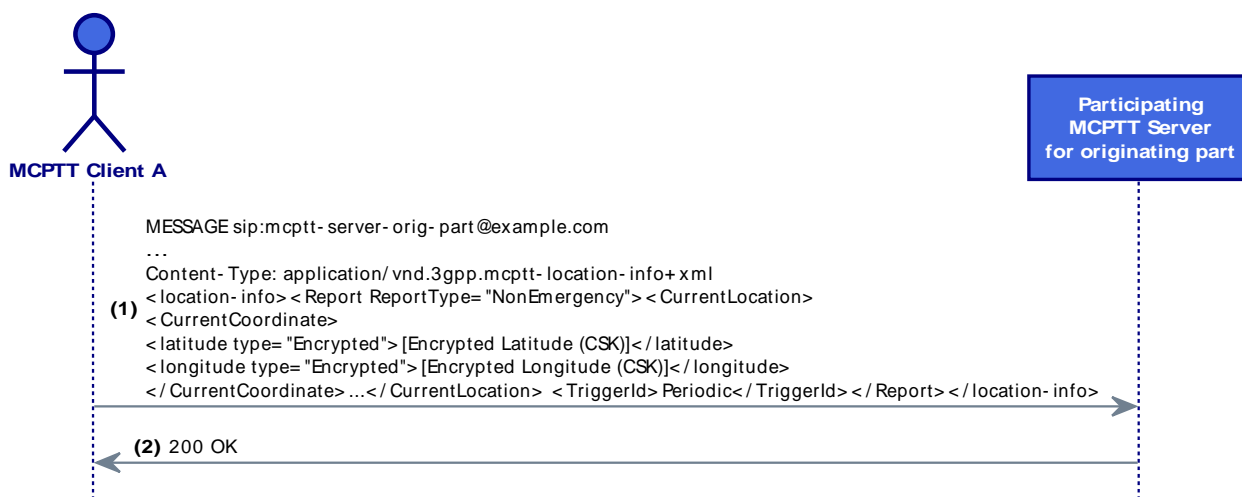


Figure 116: SEC/XMLENCRYPT/LOC/01 Message Sequence

## Message Details

Trace Pending

## Interoperability Test Description

Table 124: SEC/XMLENCRYPT/LOC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	SEC/XMLENCRYPT/LOC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and XML encryption		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_LOC, MCPTT-Client_ONN-SEC-XML, MCPTTClient_KMS</li> <li>MCPTT-Part_LOC, MCPTT-Part_ONN-SEC-XML (clause 6.7)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>MCPTT Client Location reporting mechanism properly configured</li> <li>Client has previously obtained key material from KMS</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	Any of the Location triggers is activated
	2	check	The MCPTT Client generates a report upon the reception of the request
	3	check	The MCPTT Client sends a SIP MESSAGE with the report
	4	check	XML of location report is encrypted with CSK
	5	verify	Location properly received and decoded in the MCPTT participating server

## 7.10.17 XML contents encryption in registration and authorization procedures [SEC/XMLENCRYPT/REGAUTH/01]

Assuming an IMS Core, the MCPTT Client registers and the S-CSCF sends a third-party registration. In this test case, associated diagram and message details assume the MCPTT User has previously authenticated with the IdMS and got

the mcptt\_id and needed Access Token, so that it would be included in the mcptt-info body in the original REGISTER (see clauses 7.2.1 and 7.3.2 in ETSI TS 124 379 [9]). Additionally, the user has previously downloaded the key material from the KMS as described in clauses 7.10.1 or 7.10.4 and has generated the CSK key. The REGISTER message will contain a multipart body comprised of the mcptt-info body with the encrypted Access Token and MCPTT Client ID and a MIKEY\_I\_MESSAGE with the encoded CSK key (see CSK key distribution procedure in clause 7.10.7). Encryption mechanisms for XML bodies in MCPTT standard are described in clause 9.3 in ETSI TS 133 180 [24].

Message Sequence Diagram

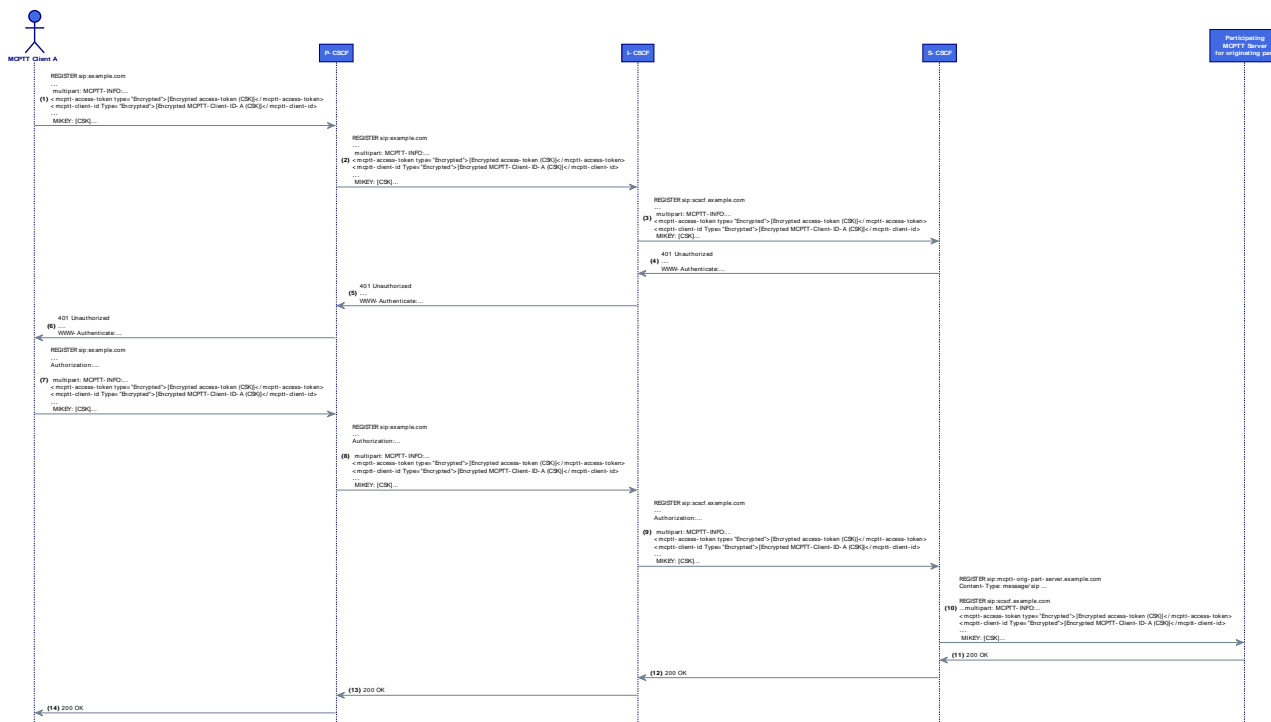


Figure 117: SEC/XMLENCRYPT/REGAUTH/01 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 125: SEC/XMLENCRYPT/REGAUTH/01 ITD

Interoperability Test Description			
<b>Identifier</b>	SEC/XMLENCRYPT/REGAUTH/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, 3rd party registration to the MCPTT Participating and XML encryption		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_REGREG</li> <li>• MCPTT-Client_ONN-SEC-XML, MCPTT-Client_KMS</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_REGAUTH</li> <li>• MCPTTPart_ONN-SEC-XML</li> <li>• IMS_3RDPARTYREGISTER</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• Client previously authenticated in the IdMS -or the Identity and Access Token have been received by other mean- Client has previously obtained key material from KMS</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) registers with its IMPU and MCPTT specific info mcptt-info
	2	check	REGISTER sent to the P-CSCF with mcptt-info body
	3	check	Access token and Client ID fields in mcptt-info body are encrypted with CSK key
	4	check	Body includes MIKEY I_MESSAGE with CSK key
	5	check	REGISTER sent to the S-CSCF
	6	check	S-CSCF creates a 3 <sup>rd</sup> Party Register towards the participating and embeds the original REGISTER as body
	7	verify	User 1 correctly registered to the IMS Core and MCPTT participating. IMPU vs. mcptt_id binding and service authorization completed.

## 7.11 MCVideo Transmission Control (TC)

### 7.11.1 Basic TC functionality [TC/BASIC/01]

This test shall verify the basic transmission control functionality as defined by ETSI TS 124 581 [15]. In order to do so, after a successful establishment of a prearranged on-demand MCVideo Group Call different users shall request the transmission and/or the reception of media and the transmission control server capabilities on the MCVideo controlling server shall be tested. For the test it is assumed that no implicit transmission request has been included or that the token has been released previously, so that "Transmission idle" state is considered as pre-condition.

Note that since MCVideo Transmission Control protocol uses binary RTCP-based signalling, in the sequence diagram and message details the decoded meaning of (some of) the selected values for different meaning fields are displayed.

Message Sequence Diagram

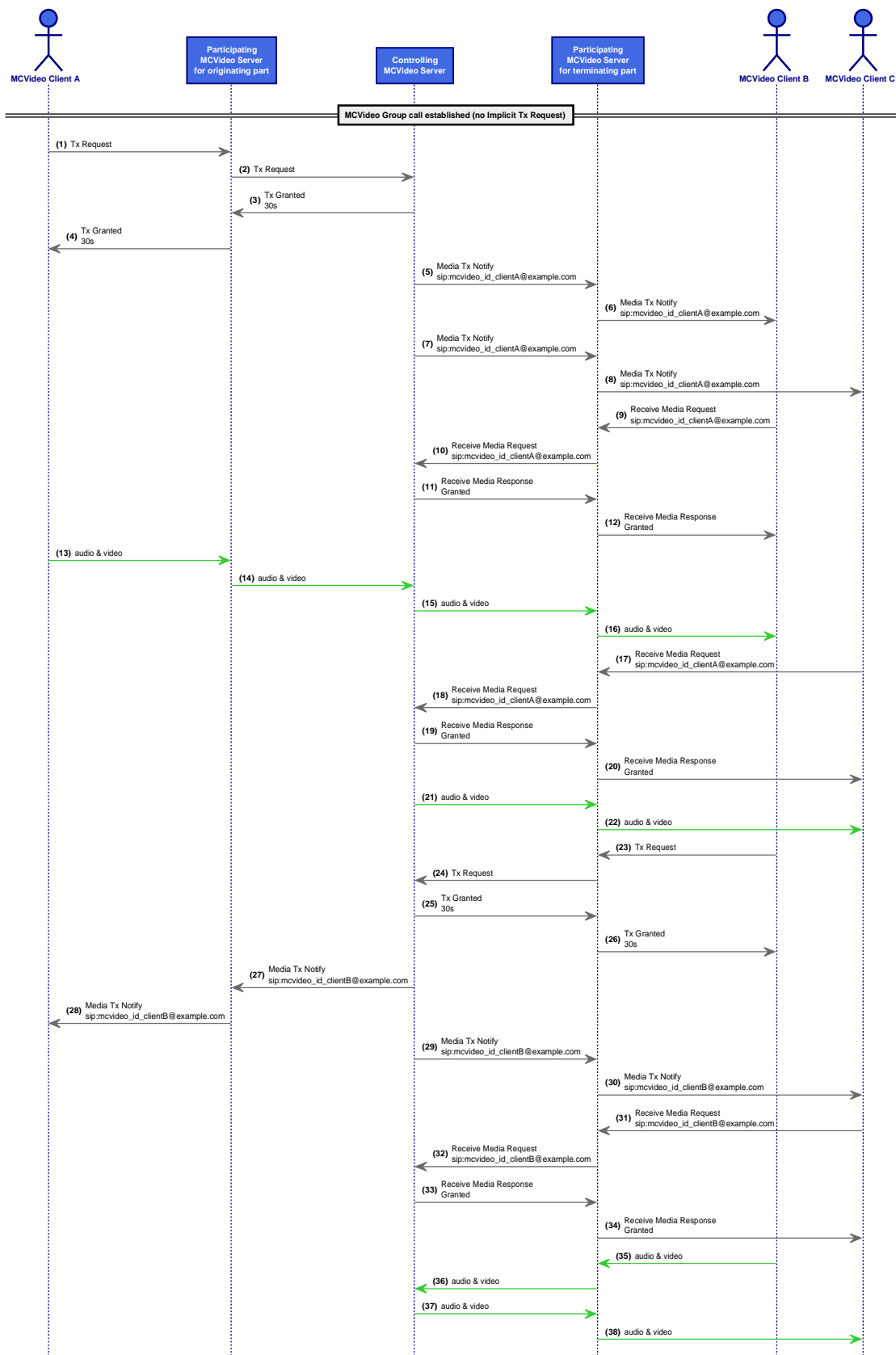


Figure 118: TC/BASIC/01 Message Sequence



Message Details

Trace Pending

Interoperability Test Description

Table 126: TC/BASIC/01 ITD

Interoperability Test Description			
<b>Identifier</b>	TC/BASIC/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCVideo Transmission Control capabilities in Clients and controlling		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>MCVideo TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>MCVideo-Client_H264, MCVideo-Client_ONN-MCVideo-TC (clause 6.5)</li> <li>MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>MCVideo-Part_ONN-MCVideo-TC</li> <li>MCVideo-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>MCVideo-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.11)</li> <li>MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_ONN-MCVideo-TC (clause 6.12)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS</li> <li>UEs properly registered to the SIP core/IMS and MCVideo system</li> <li>On-demand pre-arranged MCVideo Group Call properly established and in Transmission-Idle state</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) pushes the MCVideo transmission button
	2	check	RTCP App based Transmission Request sent to the part server
	3	check	Transmission Request sent to the controlling
	4	check	Transmission Granted (30s) sent back to User 1 and Media Tx Notify sent to Users 2 and 3
	5	check	Receive Request (clientA) sent to part server from User 2
	6	check	Receive Request (clientA) sent to the controlling
	7	check	Receive Media Response Granted sent back to User 2
	8	verify	Uni-directional flow from User 1 to User 2
	9	check	Receive Request (clientA) sent to part server from User 3
	10	check	Receive Request (clientA) sent to the controlling
	11	check	Receive Media Response Granted sent back to User 3
	12	verify	Uni-directional flow from User 1 to User 3
	13	check	Transmission Request sent to the part server from User 2
	14	check	Transmission Request sent to the controlling
	15	check	Transmission Granted (30s) sent back to User 2 and Media Tx Notify sent to Users 1 and 3
	16	check	Receive Request (clientB) sent to part server from User 3
	17	check	Receive Request (clientB) sent to the controlling
	18	check	Receive Media Response Granted sent back to User 3
	19	verify	Uni-directional flow from User 2 to User 3
	20	verify	Two media flows are received in User 3

## 7.11.2 Basic TC functionality. Maximum number of transmitters [TC/BASIC/02]

This test case extends the basic TC test case included in clause 7.11.1. It tries to demonstrate the transmission denial capabilities of the MCVideo server as defined in ETSI TS 124 581 [15]. When a new transmission request arrives at the server, the server checks if the local Cx counter has reached its upper limit. If the counter has already reached its upper limit and the incoming transmission request does not have a pre-emptive priority over already running media flows, the server will send a media transmission denial response to the requesting participant.

Message Sequence Diagram

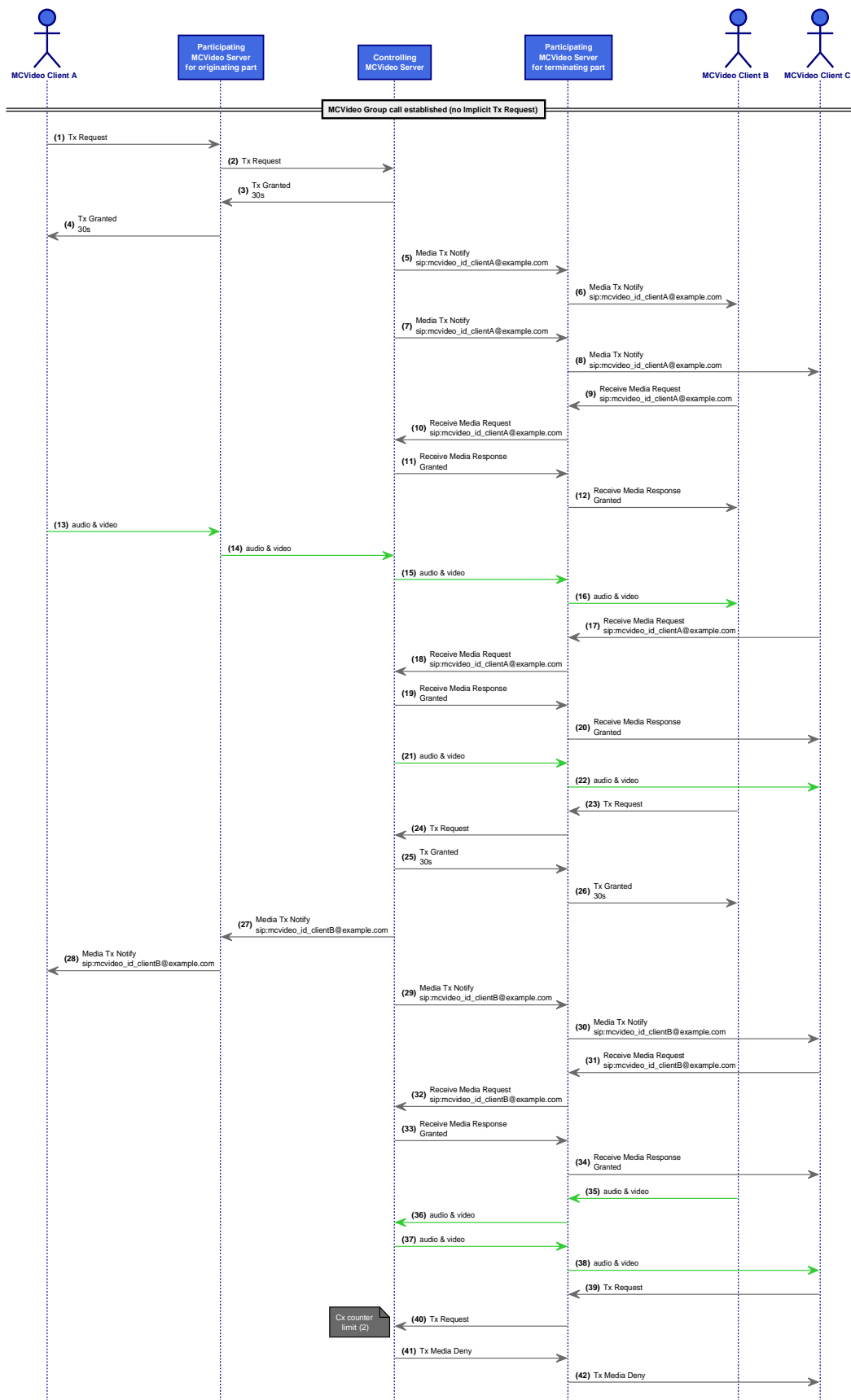


Figure 119: TC/BASIC/02 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 127: TC/BASIC/02 ITD

Interoperability Test Description			
Identifier	TC/BASIC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCVideo Transmission Control capabilities in Clients and controlling		
Configuration(s)	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
References	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>MCVideo TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
Applicability	<ul style="list-style-type: none"> <li>MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>MCVideo-Client_H264, MCVideo-Client_ONN-MCVideo-TC (clause 6.5)</li> <li>MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>MCVideo-Part_ONN-MCVideo-TC</li> <li>MCVideo-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>MCVideo-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.11)</li> <li>MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_ONN-MCVideo-TC (clause 6.12)</li> </ul>		
Pre-test conditions	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS</li> <li>UEs properly registered to the SIP core/IMS and MCVideo system</li> <li>On-demand pre-arranged MCVideo Group Call properly established and in Transmission-Idle state</li> </ul>		
Test Sequence	Step	Type	Description
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) pushes the MCVideo transmission button
	2	check	RTCP App based Transmission Request sent to the part server
	3	check	Transmission Request sent to the controlling
	4	check	Transmission Granted (30s) sent back to User 1 and Media Tx Notify sent to Users 2 and 3
	5	check	Receive Request (clientA) sent to part server from User 2
	6	check	Receive Request (clientA) sent to the controlling
	7	check	Receive Media Response Granted sent back to User 2
	8	verify	Uni-directional flow from User 1 to User 2
	9	check	Receive Request (clientA) sent to part server from User 3
	10	check	Receive Request (clientA) sent to the controlling
	11	check	Receive Media Response Granted sent back to User 3
	12	verify	Uni-directional flow from User 1 to User 3
	13	check	Transmission Request sent to the part server from User 2
	14	check	Transmission Request sent to the controlling
	15	check	Transmission Granted (30s) sent back to User 2 and Media Tx Notify sent to Users 1 and 3
	16	check	Receive Request (clientB) sent to part server from User 3
	17	check	Receive Request (clientB) sent to the controlling
	18	check	Receive Media Response Granted sent back to User 3
	19	verify	Uni-directional flow from User 2 to User 3
	20	verify	Two media flows are received in User 3
	21	check	Transmission Request sent to the part server from User 3
	22	check	Transmission Request sent to the controlling
	23	verify	Cx max. transmissions counter has reached its upper limit (2)
	24	check	Tx Media Deny sent to User 3

### 7.11.3 Basic TC functionality. Maximum number of receivers [TC/BASIC/03]

This test case extends the basic TC test case included in clause 7.11.1. It tries to demonstrate the media reception denial capabilities of the MCVideo server as defined in ETSI TS 124 581 [15]. When a new "Receive Media Request" arrives at the server, the server checks if the local C7 counter has reached its upper limit. If the counter has already reached its upper limit and the incoming reception request does not have a pre-emptive priority over already accepted receivers, the server will send a "Receive Media Response" with the result set to "Rejected" to the requesting participant.

Message Sequence Diagram

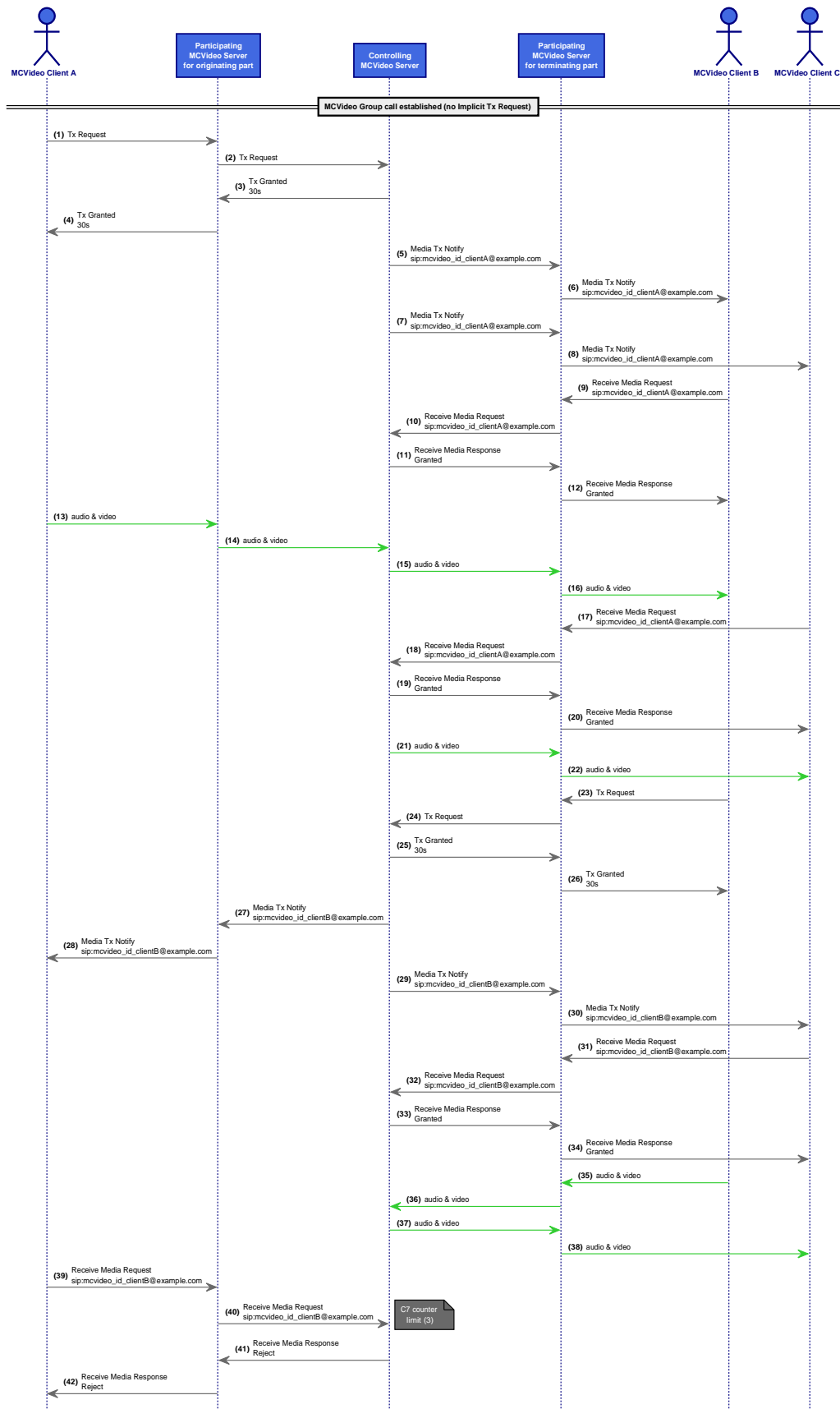


Figure 120: TC/BASIC/03 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 128: TC/BASIC/03 ITD

Interoperability Test Description			
<b>Identifier</b>	TC/BASIC/03		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCVideo Transmission Control capabilities in Clients and controlling		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• MCVideo TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_ONN-MCVideo-TC (clause 6.5)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC</li> <li>• MCVideo-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCVideo-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.11)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_ONN-MCVideo-TC (clause 6.12)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• UEs properly registered to the SIP core/IMS and MCVideo system</li> <li>• On-demand pre-arranged MCVideo Group Call properly established and in Transmission-Idle state</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) pushes the MCVideo transmission button
	2	check	RTCP App based Transmission Request sent to the part server
	3	check	Transmission Request sent to the controlling
	4	check	Transmission Granted (30s) sent back to User 1 and Media Tx Notify sent to Users 2 and 3
	5	check	Receive Request (clientA) sent to part server from User 2
	6	check	Receive Request (clientA) sent to the controlling
	7	check	Receive Media Response Granted sent back to User 2
	8	verify	Uni-directional flow from User 1 to User 2
	9	check	Receive Request (clientA) sent to part server from User 3
	10	check	Receive Request (clientA) sent to the controlling
	11	check	Receive Media Response Granted sent back to User 3
	12	verify	Uni-directional flow from User 1 to User 3
	13	check	Transmission Request sent to the part server from User 2
	14	check	Transmission Request sent to the controlling
	15	check	Transmission Granted (30s) sent back to User 2 and Media Tx Notify sent to Users 1 and 3
	16	check	Receive Request (clientB) sent to part server from User 3
	17	check	Receive Request (clientB) sent to the controlling
	18	check	Receive Media Response Granted sent back to User 3
	19	verify	Uni-directional flow from User 2 to User 3
	20	verify	Two media flows are received in User 3
	21	check	Receive Request (clientB) sent to part server from User 1
	22	check	Receive Request (clientB) sent to the controlling
	23	verify	C7 max. receivers counter has reached its upper limit (3)
	24	check	Receive Media Response Rejected sent back to User 1

#### 7.11.4 Basic TC functionality. Maximum number of transmitters and pre-emptive priority request [TC/BASIC/04]

This test case extends the basic TC test case included in clause 7.11.1. It tries to demonstrate the transmission revocation capabilities of the MCVideo server as defined in ETSI TS 124 581 [15]. When a new transmission request arrives at the server, the server checks if the local Cx counter has reached its upper limit. If the counter has already reached its upper limit and the incoming transmission request has a pre-emptive priority over already running media flows, the server will send a media transmission revocation response to the video transmitter of the video transmission with lowest priority and grant transmission to the revoking user.



Message Sequence Diagram

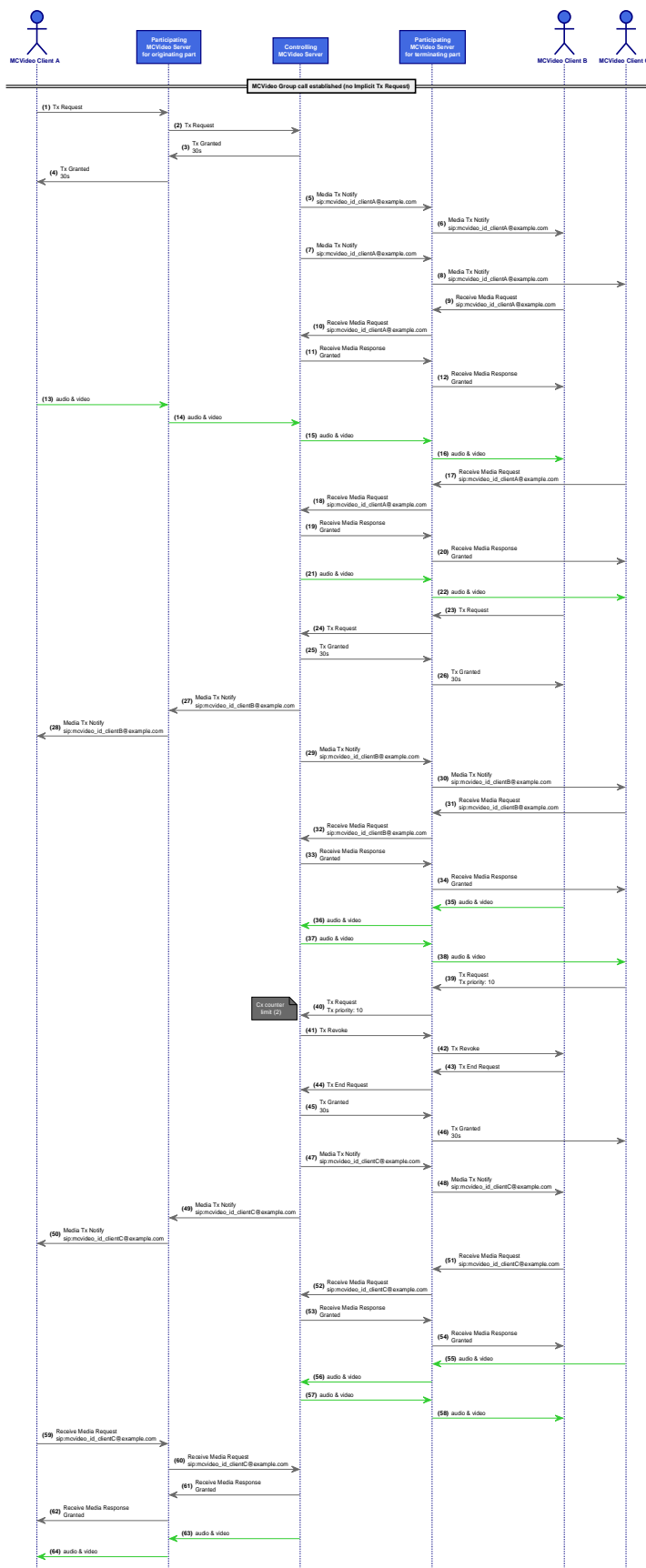


Figure 120a: TC/BASIC/04 Message Sequence

Message Details

Trace pending

Interoperability Test Description

**Table 128a: TC/BASIC/04 ITD**

<b>Interoperability Test Description</b>	
<b>Identifier</b>	TC/BASIC/04
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCVideo Transmission Controlling capabilities in Clients and controlling
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> <li>• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</li> </ul>
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB</li> <li>• MCVideo-Client_H264, MCVideo-Client_AFFIL</li> <li>• MCVideoClient_ONN-MCVideo-TC (clause 6.2)</li> <li>• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL</li> <li>• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)</li> <li>• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</li> </ul>
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS</li> <li>• UEs properly registered to the SIP core/IMS and MCVideo system</li> <li>• On-demand pre-arranged Group Call properly established and in TM-Idle state</li> </ul>

Test Sequence	Step	Type	Description
	1	stimulus	User 1 (mcvideo_id_clientA@example.com) pushes the MCVideo transmission button
	2	check	RTCP App based Transmission Request sent to the part server
	3	check	Transmission Request sent to the controlling
	4	check	Transmission Granted (30s) sent back to User 1 and Media Tx Notify sent to Users 2 and 3
	5	check	Receive Request (clientA) sent to part server from User 2
	6	check	Receive Request (clientA) sent to the controlling
	7	check	Receive Media Response Granted sent back to User 2
	8	verify	Uni-directional flow from User 1 to Users 2
	9	check	Receive Request (clientA) sent to part server from User 3
	10	check	Receive Request (clientA) sent to the controlling
	11	check	Receive Media Response Granted sent back to User 3
	12	verify	Uni-directional flow from User 1 to Users 3
	13	check	Transmission Request sent to the part server from User 2
	14	check	Transmission Request sent to the controlling
	15	check	Transmission Granted (30s) sent back to User 2 and Media Tx Notify sent to Users 1 and 3
	16	check	Receive Request (clientB) sent to part server from User 3
	17	check	Receive Request (clientB) sent to the controlling
	18	check	Receive Media Response Granted sent back to User 3
	19	verify	Uni-directional flow from User 2 to User 3
	20	verify	Two media flows are received in User 3
	21	check	Transmission Request with pre-emptive priority sent to the part server from User 3
	22	check	Transmission Request with pre-emptive priority sent to the controlling
	23	verify	Cx max. transmissions counter has reached its upper limit (2)
	24	check	Tx Revoke sent to User 3
	25	check	Transmission Granted (30s) sent back to User 3 and Media Tx Notify sent to Users 1 and 2
	26	check	Receive Request (clientC) sent to part server from User 2
	27	check	Receive Request (clientC) sent to the controlling
	28	check	Receive Media Response Granted sent back to User 2
	29	verify	Uni-directional flow from User 3 to User 2
	30	verify	Two media flows are received in User 2

## 7.12 Server-to-Server communications (S2S)

### 7.12.1 On-demand prearranged MCPTT Group Call to temporary group in trusted mode [S2S/ONN/GROUP/PREA/ONDEM/TEMP/01]

The test cases in this clause and in the following try to illustrate the controlling and non-controlling capabilities of the MCPTT server for managing on-demand pre-arranged group calls to temporary groups as described in ETSI TS 124 379 [9]. The test case considers that there will be two partner systems trying to establish a call to a temporary group that has been formed by two different constituent groups: one from the primary system and the other one from the partner system. The behaviour of these servers will depend on the existence of a trusted relationship between the two partner systems.

This test case assumes that a temporary group already exists in the GSM or that the controlling MCPTT server has already cached the information of this temporary group. The controlling MCPTT server will be the owner of this temporary group. The controlling server will be also the owner of one of the constituent groups and the other group will belong to another controlling server in different partner system. A trusted relationship exists between these two systems, so the controlling server can establish the call with any of the users which are members of the temporary group. The controlling server will learn the MCPTT IDs of these participants in a 403 Forbidden message sent from the non-controlling server as a response to the INVITE request.

The group document of the temporary group should contain the <on-network-temporary> tag and the list of constituent groups in <constituent-MCPTT-group-ID> tags as explained in ETSI TS 124 481 [11]. At the same time, the group documents of the corresponding constituent groups should contain the <on-network-regrouped> tag and the temporary group identity of the temporary group in the "temporary-MCPTT-group-ID" attribute.

NOTE: This test case does not include any group re-grouping procedure with the GMS. It assumes that these procedures have already taken place and that both temporary and constituent groups are correctly configured. It also assumes that all clients are aware of the existence of a temporary group and that the caller sets the call with this temporary group.

Message Sequence Diagram

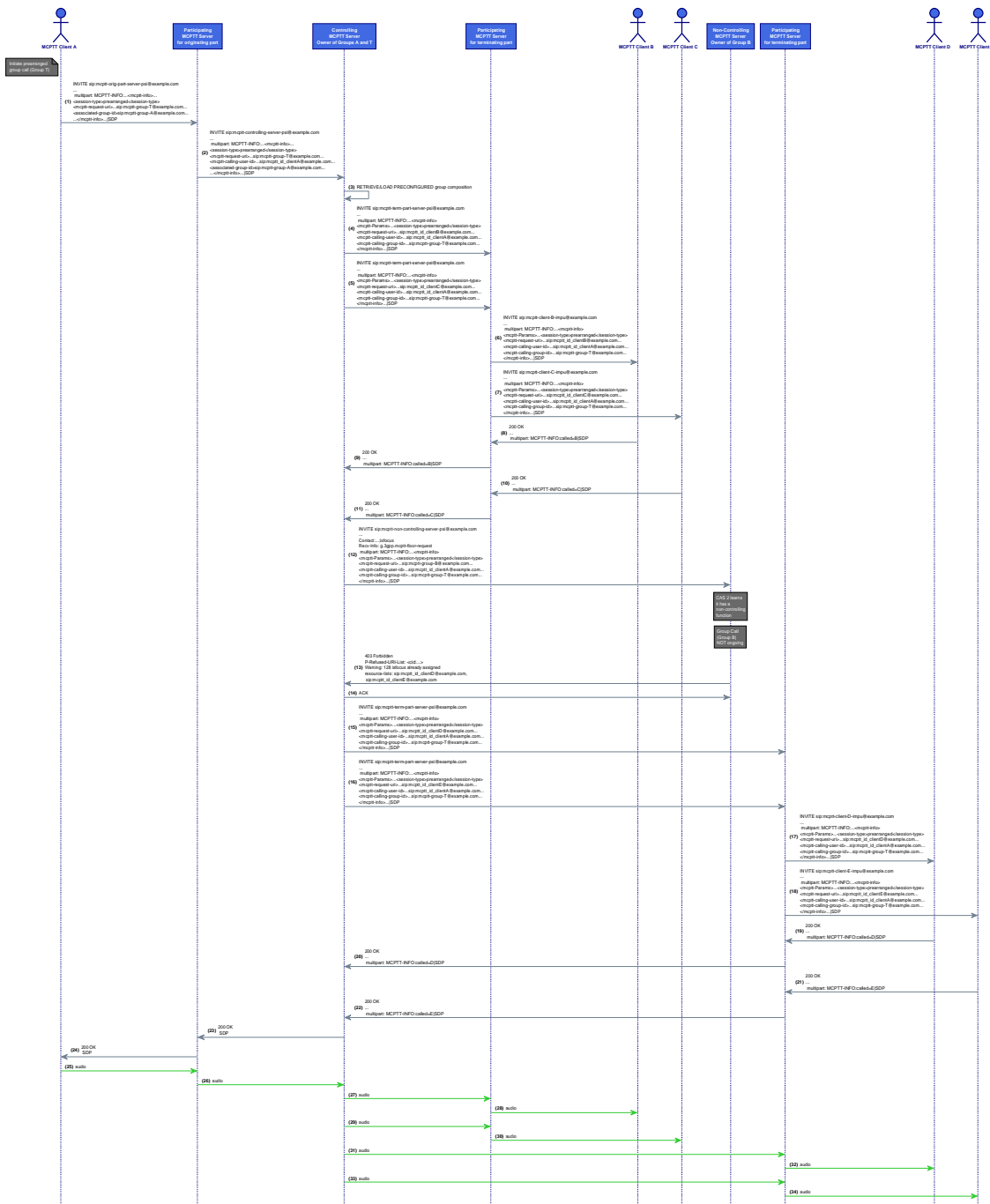


Figure 121: S2S/ONN/GROUP/PRA/ONDEM/TEMP/01 Message Sequence

Message Details

Trace Pending

## Interoperability Test Description

Table 129: S2S/ONN/GROUP/PREA/ONDEM/TEMP/01 ITD

Interoperability Test Description			
<b>Identifier</b>	S2S/ONN/GROUP/PREA/ONDEM/TEMP/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT controlling and non-controlling capabilities in MCPTT servers		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Group re-grouping procedure already finished for the temporary group</li> <li>• Calling user is affiliated to the called group</li> <li>• Trusted relationship exists between partner systems</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates a prearranged group call to mcptt-group-T (temporary group)
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com
	3	check	INVITE received at the MCPTT controlling server
	4	check	The MCPTT controlling server loads the group document of the temporary group and learns that it is a temporary group
	5	check	The controlling server creates an INVITE per each of the "n" affiliated members of mcptt-group-A (one of the constituent group)
	6	check	"n" INVITES received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	7	check	"n" INVITES received at mcptt_id_clientX
	8	check	The controlling server sends an INVITE request to the non-controlling server, which is owner of the other constituent group (mcptt-group-B)
	9	check	The non-controlling server sends a 403 Forbidden response to the controlling server including a list of affiliated members to mcptt-group-B
	10	check	The controlling server creates an INVITE per each of the "m" affiliated members of mcptt-group-B
	11	check	"m" INVITES received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	12	check	"m" INVITES received at mcptt_id_clientX
	13	verify	Call connected and multiple media flows exchanged

### 7.12.2 On-demand prearranged MCPTT Group Call to temporary group in untrusted mode [S2S/ONN/GROUP/PREA/ONDEM/TEMP/02]

This is a similar case to the one described in the previous clause 7.12.1. The only difference is that there is no trusted relationship between the two partner systems, so the controlling server cannot establish the call with any of the users which are not members of the groups it owns. The non-controlling server will be in charge of inviting the members of the constituent groups in this case.

**NOTE:** This test case does not include any group re-grouping procedure with the GMS. It assumes that these procedures have already taken place and that both temporary and constituent groups are correctly configured. It also assumes that all clients are aware of the existence of a temporary group and that the caller sets the call with this temporary group.

#### Message Sequence Diagram

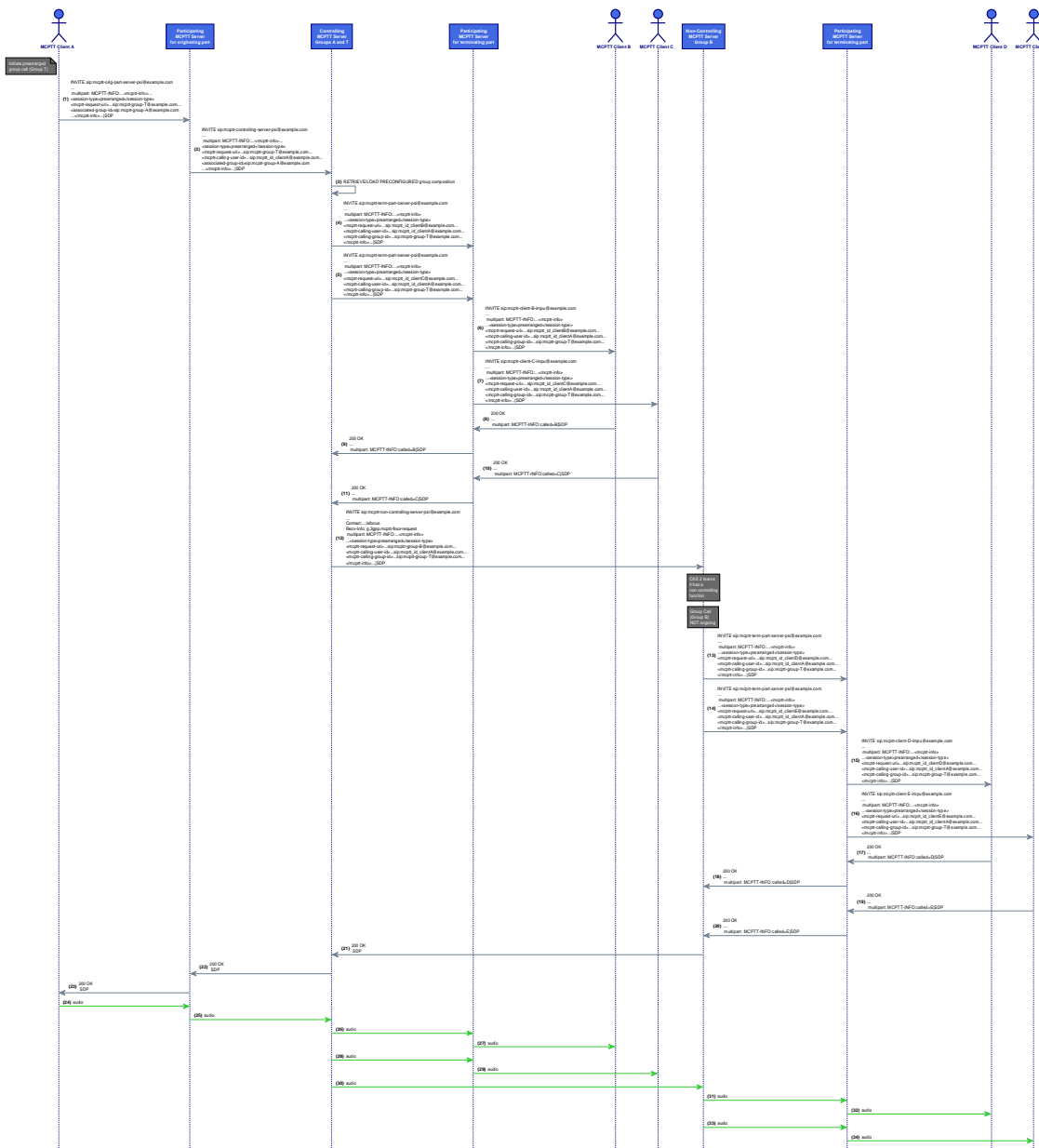


Figure 122: ONN/GROUP/PREA/ONDEM/TEMP/02 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 130: ONN/GROUP/PREA/ONDEM/TEMP/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	ONN/GROUP/PREA/ONDEM/TEMP/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT controlling and non-controlling capabilities in MCPTT servers		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>CFG_ONN_OTT-1 (clause 5.2)</li> <li>CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)</li> <li>MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)</li> <li>MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>IP connectivity among all elements of the specific scenario</li> <li>Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>Group re-grouping procedure already finished for the temporary group</li> <li>Calling user is affiliated to the called group</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates a prearranged group call to mcptt-group-T (temporary group)
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com
	3	check	INVITE received at the MCPTT controlling server
	4	check	The MCPTT controlling server loads the group document of the temporary group and learns that it is a temporary group
	5	check	The controlling server creates an INVITE per each of the "n" affiliated members of mcptt-group-A (one of the constituent group)
	6	check	"n" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	7	check	"n" INVITEs received at mcptt_id_clientX
	8	check	The controlling server sends an INVITE request to the non-controlling server, which is owner of the other constituent group (mcptt-group-B)
	9	check	The non-controlling server creates an INVITE per each of the "m" affiliated members of mcptt-group-B
	10	check	"m" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	11	check	"m" INVITEs received at mcptt_id_clientX
	12	verify	Call connected and multiple media flows exchanged

## 7.13 Functional Alias (FA)

### 7.13.1 MCPTT user requests to activate one or more functional aliases [FA/CHANGE/01]

Note that, according to clause 9A.2.1.1 in ETSI TS 124 379 [9] the MCPTT client needs to initiate the Functional Alias (FA) status determination procedure for the MCPTT user before starting the functional alias status change procedure for the MCPTT user. So consider that the operations regarding determination of the status of a functional alias covered by the TC [FA/DET/01] have been already taken place. Similarly, the participating servers will need to subscribe to the status of a specific functional alias to get later notified. In the proposed diagram both operations are therefore considered as previously completed.

According to clause 9A.2.1.2 in ETSI TS 124 379 [9], in order to indicate that a MCPTT user requests to activate one or more functional aliases the MCPTT client shall generate a SIP PUBLISH request according to ETSI TS 124 229 [6] and IETF RFC 3428 [42], and IETF RFC 3856 [26] with an Expires header field set to 4294967295 according to IETF RFC 3903 [27] and a multipart body with an application/vnd.3gpp.mcptt-info+xml MIME body with <mcptt-request-uri> element set to the MCPTT ID of the MCPTT user and an application/pdf+xml MIME body indicating per-user functional alias information according to clause 9A.3.1 in ETSI TS 124 379 [9] all functional aliases where the MCPTT user requests activation for the MCPTT ID, the MCPTT client ID of the targeted MCPTT client and the <p-id-fa> child element of the <presence> root element set to a globally unique value. Check clause 9A.3.1.2 in ETSI TS 124 379 [9] for formatting details.

Note that clause 9A.3.1.2 in ETSI TS 124 379 [9] makes a distinction between:

- a) The application/pdf+xml MIME body indicating per-user functional alias information, constructed according to IETF RFC 3863 [43].
- b) The application/pdf+xml MIME body indicating per-functional alias status information, constructed according to IETF RFC 3856 [26].

In the first SIP PUBLISH per-user functional information is provided (and should be formatted accordingly).

According to clause 9A.2.2.2.3 in ETSI TS 124 379 [9], the originating participating server serving the user, upon receiving the SIP PUBLISH request including the activation of functional alias will check the proper formatting of the request, the originating MCPTT ID and permissions and respond with SIP 200 (OK) response to the SIP PUBLISH request according to ETSI TS 124 229 [6] and IETF RFC 3903 [27].

Then the participating server will analyse every MCPTT user information entry in the application/pdf+xml MIME body of the SIP PUBLISH and follow the procedures in Step 12.c in clause 9A.2.2.2.3 in ETSI TS 124 379 [9] to construct the candidate list of the MCPTT functional alias entries as follows (considering only the activation case, so that the participating does not have a functional alias information entry in the served list of the functional alias entries or it has already expired):

- 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 reset the activating p-id-fa of the new functional alias information entry.

Considering this is the first activation, the participating will later replace the list of the functional alias information entries stored in the served MCPTT user information entry with the candidate list of the functional alias information entries and send functional alias status change (now "activating") towards MCPTT server owning the functional alias following the procedures specified in clause 9A.2.2.2.6 in ETSI TS 124 379 [9] for the served MCPTT ID (and considering the subscription of the MCPTT Client to the status of the functional alias, a NOTIFY will be also submitted back to the Client).



Therefore, the MCPTT server shall generate a SIP PUBLISH request according to ETSI TS 124 229 [6], IETF RFC 3903 [27] and IETF RFC 3856 [26] with the Request-URI set to the public service identity of the controlling MCPTT function associated with the handled functional alias ID, shall include an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcptt-request-uri> element set to the handled functional alias ID and <mcptt-calling-user-id> element set to the served MCPTT ID and, since it's sending an activation request, shall include an application/pidf+xml MIME body indicating per-functional alias status information constructed according to clause 9A.3.1.2 in ETSI TS 124 379 [9]. The MCPTT server shall indicate all served MCPTT 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 MCPTT user information entry; and
- c) the MCPTT user information entry is a served MCPTT user information entry.

The MCPTT server shall set the <p-id-fa> child element of the <presence> root element to the current p-id-fa.

The MCPTT server shall not include the "expires" attribute in the <functionalAlias> element.

After that, it shall notify the Client using the procedures specified in clause 9A.2.2.2.5 in ETSI TS 124 379 [9], thus, using a SIP NOTIFY with an application/pidf+xml MIME body.

Finally, the controlling server will process the change requests according to clause 9A.2.2.3.3 in ETSI TS 124 379 [9]. Then after checking different fields including the ownership of the functional alias, the server shall respond with SIP 200 (OK) response to the SIP PUBLISH request according to ETSI TS 124 229 [6], IETF RFC 3903 [27]. In the response, the MCPTT server shall set the Expires header field according to IETF RFC 3903 [27], to the selected expiration time to later carry out the procedures for notification of the change in clause 9A.2.2.3.5 for the served functional alias ID.

Such notification will comprise sending a SIP NOTIFY request according to ETSI TS 124 229 [6], and IETF RFC 6665 [34] for the subscription created in clause 9.2.2.3.4. In the SIP NOTIFY request, the MCPTT server shall include the generated application/pidf+xml MIME body indicating per-functional alias information.

NOTE 1: Release 15 includes some ambiguities regarding using MCPTT ID vs MCPTT client ID in both the coding mechanism and the participating server behaviour. Release 16 fixes have been considered in the following diagram.

NOTE 2: FA\_A1, FA\_A2, etc. Functional Aliases have been chosen in the diagrams as examples but since they are normally URI they would typically get the values sip:driver\_trainX@example.com.

Message Sequence Diagram

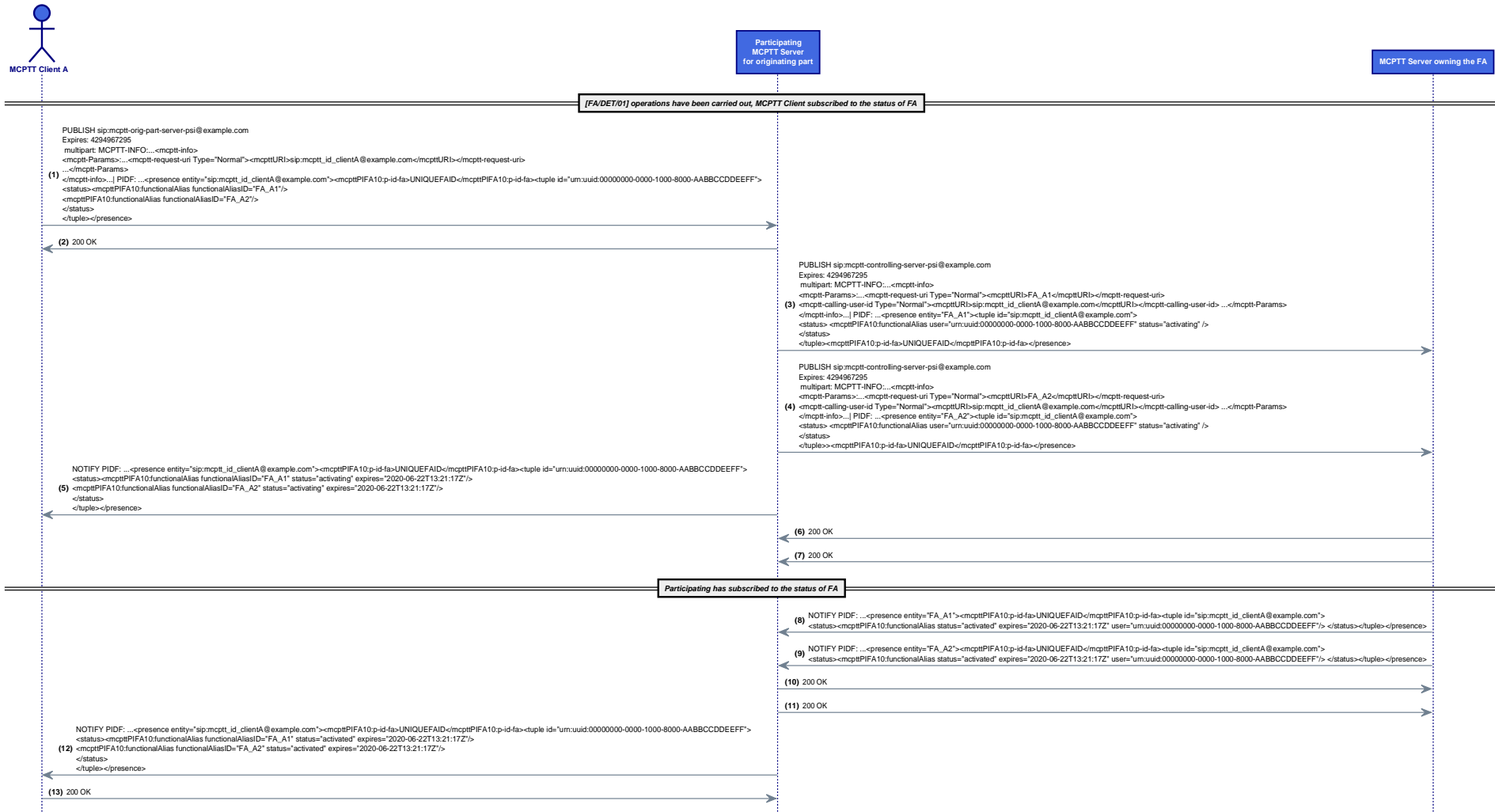


Figure 122a: FA/CHANGE/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 130a: FA/CHANGE/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	FA/CHANGE/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, successful initial activation of two Functional Alias		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) requests the activation of two functional alias FA_A1 and FA_A2
	2	check	SIP PUBLISH with mcptt-info and pdf+xml MIMEs sent to the originating participating
	3	check	Participating acknowledges (200 OK) the reception of the PUBLISH
	4	check	Participating checks the candidate list of functional alias, returns a NOTIFY (upon prior subscription) and forwards "n=2" per-functional-alias PUBLISH to the server owning those FAs
	5	check	The controlling updates the FA status and notifies back
	6	verify	Client gets the notification of the successful activation of the FAs and related Expire times

### 7.13.2 MCPTT user requests to deactivate one or more functional aliases [FA/CHANGE/02]

Note that, as a prerequisite, when the MCPTT user requests to deactivate a functional alias, the MCPTT 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 MCPTT user profile document (see the MCPTT user profile document in ETSI TS 124 484 [14]).

If allowed, the test case is equivalent to the activation [FA/CHANGE/01] but initially setting the Expires header field according to IETF RFC 3903 [27], to zero.

The participating, upon receiving the SIP PUBLISH and checking that the Expires header field has zero value, shall set the candidate expiration interval to zero, and respond with SIP 200 (OK) with the proper Expires value. Later, it will construct the candidate list of the functional alias information entries by copying per each functional alias considered in the SIP PUBLISH the functional alias entry of the served list of the functional alias information into a new functional alias information entry of the candidate, setting the functional alias status of the new functional alias information entry to the "de-activating" state and setting the expiration time of the new functional alias information entry to the current time increased with twice the value of timer F.

Once the candidate list is built and considering the specific situation of the affected FAs (matching the condition, etc. 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, etc.) it shall perform the procedures specified in clause 9A.2.2.2.6 in ETSI TS 124 379 [9] and send both per-functional-alias status SIP PUBLISH requests to the owner of the FAs.

NOTE: In the example in the diagram it is assumed that the MCPTT User has no other activated/activating FAs.

The controlling shall remove the MCPTT user information entry such that the MCPTT user information entry is in the list of the MCPTT user information entries of the served functional alias information entry; and the MCPTT user information entry has the MCPTT ID set to the served MCPTT ID and shall perform the procedures specified in clause 9A.2.2.3.5 in ETSI TS 124 379 [9] for the served functional alias ID. That results on sending back an empty NOTIFY per subscription from the controlling to the participating and final empty NOTIFY from the participating to the client since there is no list of activated Functional Aliases for this user.

Message Sequence Diagram

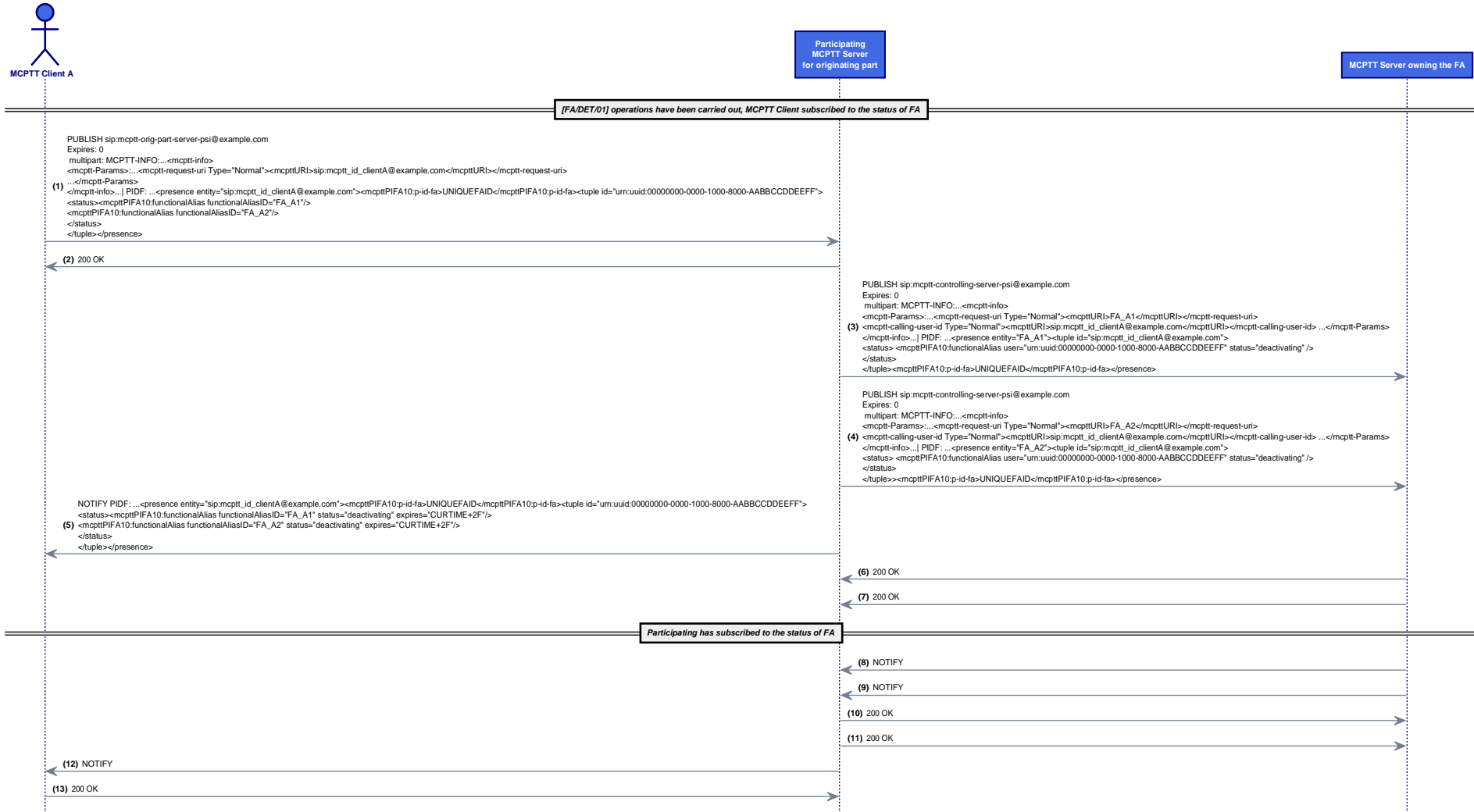


Figure 122b: FA/CHANGE/02 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 130b: FA/CHANGE/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	FA/CHANGE/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, deactivation of two Functional Aliases		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Client has previously activated FA_A1 and FA_A2</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) requests the deactivation of two functional alias FA_A1 and FA_A2
	2	check	SIP PUBLISH with mcptt-info and pdf+xml MIMEs sent to the originating participating with Expires = 0
	3	check	Participating acknowledges (200 OK) the reception of the PUBLISH
	4	check	Participating checks the candidate list of functional alias, returns a NOTIFY (upon prior subscription) and forwards "n=2" per-functional-alias PUBLISH to the server owning those FAs
	5	check	The controlling updates the FA status and sends back empty NOTIFYes
	6	verify	Client finally gets the notification of the successful deactivation of the FAs

### 7.13.3 MCPTT user refreshes the interest on one or more functional aliases [FA/CHANGE/03]

As described in clause 9A.2.1.1 in ETSI TS 124 379 [9] this test case comprises the request to refresh an MCPTT user interest in one or more functional aliases due to their near expiration time. This would imply that such FA has been previously activated ([FA/CHANGE/01]) and its status notified ([FA/DET/01]), therefore the status set to the "activated" state has been received in a SIP NOTIFY request as in clause 9A.2.1.3.

The mechanism will be equivalent to that in [FA/CHANGE/01] but considering the pre-requisite above and the use of the refresh mechanism defined in IETF RFC 3903 [27]. Therefore, in the new SIP PUBLISH no body will be included but a Expires value no lower than 4294967295 (otherwise the participating will respond with SIP 423 -Interval too Brief-) and a Sip-If-Match header set to the SIP-Etagvalue obtained in the answer to the previous PUBLISH.

**NOTE:** How the refresh mechanism in the MCPTT Client to participating is translated into the refresh mechanism between participating and controlling is not explicitly defined in ETSI TS 124 379 [9]. In fact, IETF RFC 3903 [27] refresh mechanism has been depicted in the diagram (thus, using empty bodies).

Message Sequence Diagram

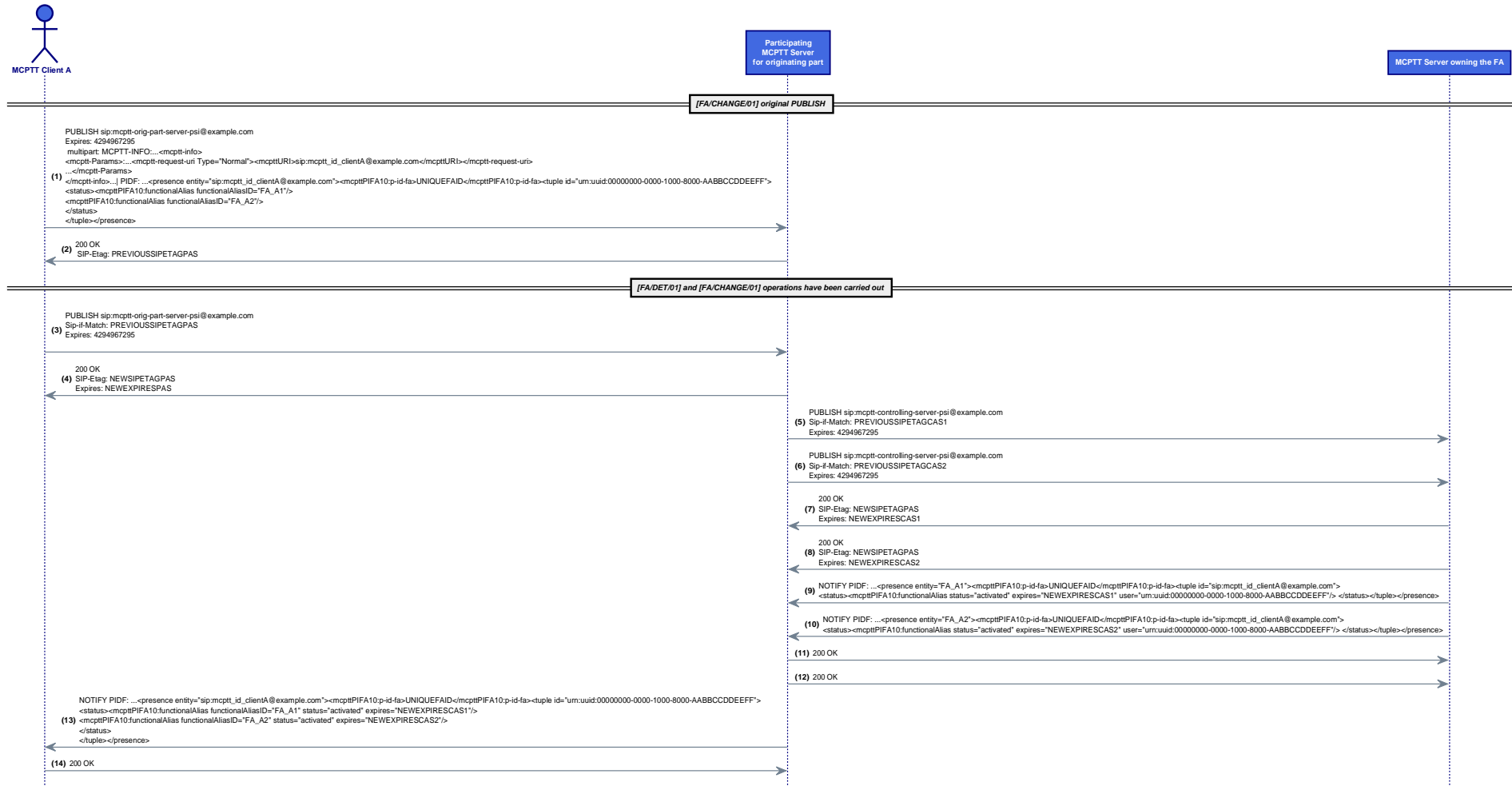


Figure 122c: FA/CHANGE/03 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 130c: FA/CHANGE/03 ITD**

Interoperability Test Description			
<b>Identifier</b>	FA/CHANGE/03		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, successful initial activation of two Functional Aliases		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Client has previously activated FA_A1 and FA_A2</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	Upon timer expiration the Client of User 1 (mcptt_id_clientA@example.com) refreshes the interest in two functional alias FA_A1 and FA_A2
	2	check	SIP PUBLISH with SIP-If-Match header set to the previous SIP-Etag and Expires value > 2^32 -1
	3	check	Participating acknowledges (200 OK) the reception of the PUBLISH
	4	check	Participating triggers the cascade refresh of the associated PUBLISH to the controlling
	5	check	The controlling updates the FA status and notifies back
	6	verify	Client gets the notification of the successful refresh of the FAs and new Expire times

### 7.13.4 MCPTT user takes over a functional aliases [FA/CHANGE/04]

The MCPTT client has previously initiated the Functional Alias (FA) status determination procedure and received a notification (SIP NOTIFY) of the FA been already activated by other User but with status take-over-possible.

Similarly to [FA/CHANGE/01] and according to clause 9A.2.1.2 in ETSI TS 124 379 [9], in order to indicate that a MCPTT user requests to take over one functional alias the MCPTT client shall generate a SIP PUBLISH request according to ETSI TS 124 229 [6] and IETF RFC 3428 [42], and IETF RFC 3856 [26] with an Expires header field set to 4294967295 according to IETF RFC 3903 [27] and a multipart body with an application/vnd.3gpp.mcptt-info+xml MIME body with <mcptt-request-uri> element set to the MCPTT ID of the MCPTT user and an application/pdf+xml MIME body indicating per-user functional alias information according to clause 9A.3.1 in ETSI TS 124 379 [9] all functional aliases where the MCPTT user requests activation for the MCPTT ID, the MCPTT client ID of the targeted MCPTT client and the <p-id-fa> child element of the <presence> root element set to a globally unique value and <take-over> child element set to "true". Check clause 9A.3.1.2 in ETSI TS 124 379 [9] for formatting details.



According to clause 9A.2.2.2.3, the originating participating server serving the user, upon receiving the SIP PUBLISH request including the take-over of functional alias will check the proper formatting of the request, the originating MCPTT ID and permissions and respond with SIP 200 (OK) response to the SIP PUBLISH request according to ETSI TS 124 229 [6] and IETF RFC 3903 [27].

Then the participating server will analyse the MCPTT user information entry in the application/pdf+xml MIME body of the SIP PUBLISH and follow the procedures in Step 12.c in clause 9A.2.2.2.3 to construct the candidate list of the MCPTT functional alias entries as in [FA/CHANGE/01] and send the functional alias status change request (now with the "activating" status and the <take-over> element set to "true") towards MCPTT server owning the functional alias following the procedures specified in clause 9A.2.2.2.6 for the served MCPTT ID. The remaining steps are the same as in [FA/CHANGE/01]. Of course the controlling will NOTIFY any the MCPTT User that had previously activated the FA to be taken-over the new status.

Message Sequence Diagram

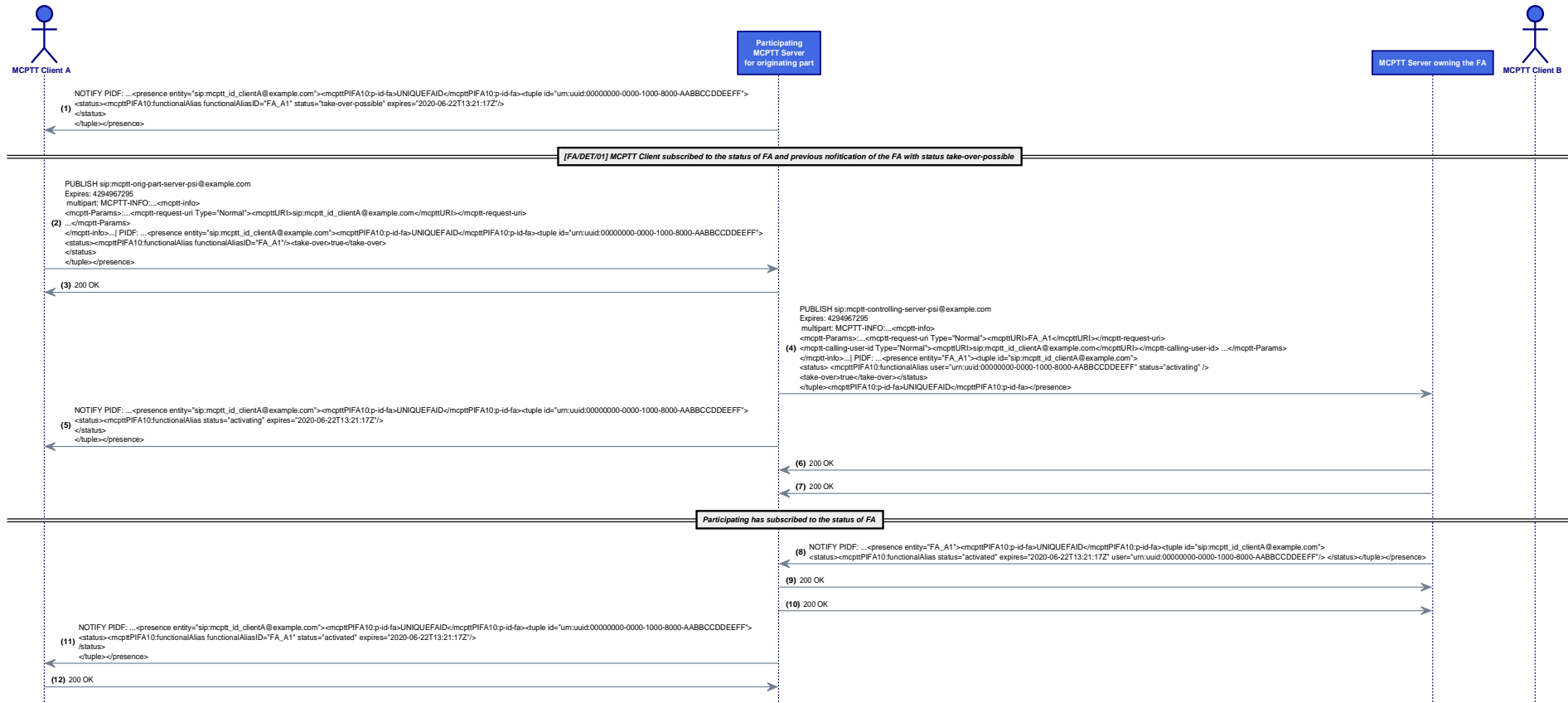


Figure 122d: FA/CHANGE/04 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 130d: FA/CHANGE/04 ITD**

Interoperability Test Description			
<b>Identifier</b>	FA/CHANGE/04		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, successful take-over of a functional alias		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> <li>• Previous notification of functional alias with status take-over-possible</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) requests the take over of functional alias FA_A1
	2	check	SIP PUBLISH with mcptt-info and pdf+xml MIMEs with take-over element set to "true" sent to the originating participating
	3	check	Participating acknowledges (200 OK) the reception of the PUBLISH
	4	check	Participating checks the candidate list of functional alias, returns a NOTIFY (upon prior subscription) and forwards per-functional-alias PUBLISH to the server owning the FA to be taken-over
	5	check	The controlling updates the FA status and notifies back
	6	verify	Client gets the notification of the successful activation of the FAs and related Expire times

### 7.13.5 MCPTT user requests to activate one or more functional aliases upon entering a location area [FA/LOCCHANGE/01]

According to clause 9A.2.1.4 in ETSI TS 124 379 [9] if a location criterion for functional alias activation is met, the MCPTT client shall initiate the functional alias status change procedure as specified in clause 9A.2.1.2, therefore, the same mechanism as in [FA/CHANGE/01] but modifying the triggering mechanism (from User requested to location triggered).

### 7.13.6 MCPTT user requests to deactivate one or more functional aliases upon entering a location area [FA/LOCCHANGE/02]

According to clause 9A.2.1.4 in ETSI TS 124 379 [9] if a location criterion for functional alias de-activation is met, the MCPTT client shall initiate the functional alias status change procedure as specified in clause 9A.2.1.2, therefore, the same mechanism as in [FA/CHANGE/02] but modifying the triggering mechanism (from User requested to location triggered).

### 7.13.7 MCPTT user determines the functional aliases successfully activated [FA/DET/01]

As stated in clause 9A.2.1.3 in ETSI TS 124 379 [9] In order to discover functional aliases activated for the MCPTT user the MCPTT client shall generate an initial SIP SUBSCRIBE request according to 3GPP TS 24.229 [6], IETF RFC 3856 [26], and IETF RFC 6665 [34] with Request-URI to the public service identity identifying the originating participating MCPTT function serving the MCPTT use, an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcptt-request-uri> element set to the MCPTT ID of the targeted MCPTT user, an Events header field set to "presence", an Accept header field containing the application/pdf+xml MIME type. and, in case the MCPTT client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [34], to 4294967295.

NOTE: Basically, the procedure defined above for the subscription is equivalent to that in affiliation [AFFIL/DET/01].

According to clause 9A.2.2.4, the (originating) participating server of the user shall identify the originating MCPTT ID from public user identity in the P-Asserted-Identity header field of the SIP SUBSCRIBE and check it matches the <mcptt-request-uri> of the mcptt-info MIME body. Later, it shall generate a SIP 200 (OK) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [6], IETF RFC 6665 [34] and shall notify (for the duration of the subscription) the subscriber about changes of the information of the served MCPTT ID, as described in clause 9A.2.2.2.5.

## Message Sequence Diagram



Figure 122e: FA/DET/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 130e: FA/DET/01 ITD**

Interoperability Test Description			
<b>Identifier</b>	FA/DET/01		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, determination of the Functional Aliases activated for the requesting User		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) requests the determination of the FAs activated for him/her
	2	check	SIP SUBSCRIBE with mcptt-info sent to the originating participating
	3	check	Participating acknowledges (200 OK) the reception of the SUBSCRIBE
	4	verify	Client gets the notification of the FAs activated (and status).

### 7.13.8 MCPTT user determines the functional aliases successfully activated for another user [FA/DET/02]

Similarly to [FA/DET/01] and as stated in clause 9A.2.1.3 in ETSI TS 124 379 [9] In order to discover functional aliases which another MCPTT user has activated the MCPTT client shall generate an initial SIP SUBSCRIBE request according to ETSI TS 124 229 [6], IETF RFC 3856 [26], and IETF RFC 6665 [34] with Request-URI to the public service identity identifying the originating participating MCPTT function serving the MCPTT use, an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcptt-request-uri> element set to the MCPTT ID of the targeted MCPTT user (in this case another user), an Events header field set to "presence", an Accept header field containing the application/pidf+xml MIME type. and, in case the MCPTT client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [34], to 4294967295.

**NOTE:** There is a gap in the ETSI TS 124 379 [9] regarding the role of the participating servers serving both the calling and the target mcptt id. The role of the originating would be mapping the P-Asserted-Identity of the User A to its mcptt\_id and include it as <mcptt-calling-user-id> and route it to the terminating serving the other user (the mapping mechanism between mcptt\_ids and serving participating is not part of the standard).

Message Sequence Diagram

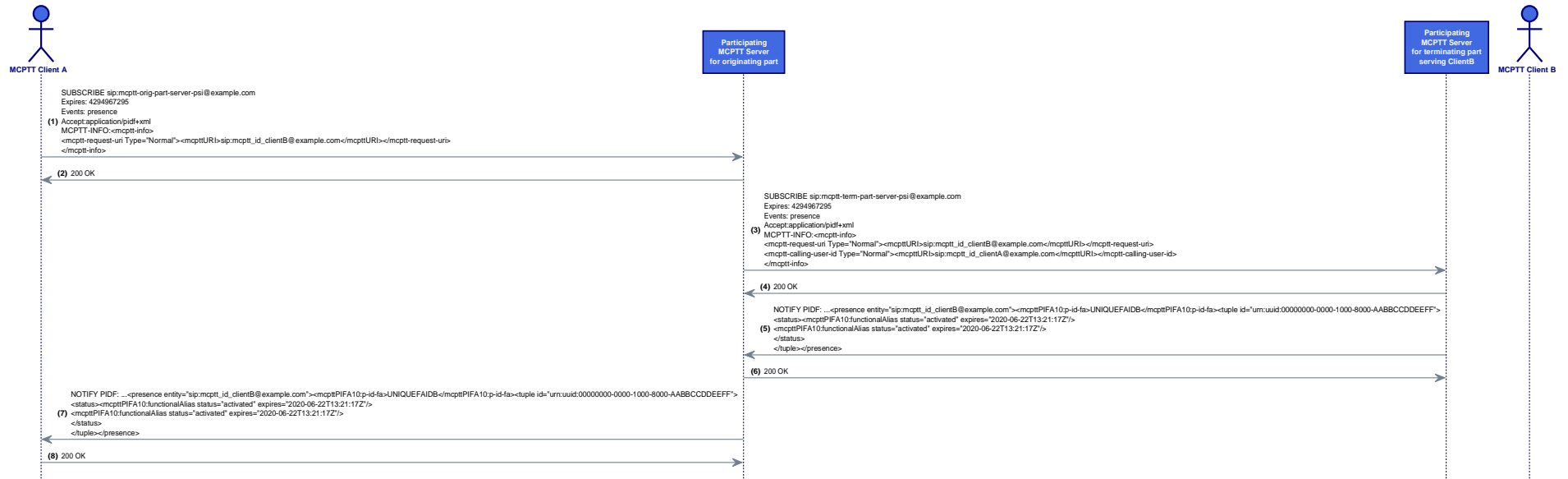


Figure 122f: FA/DET/02 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

**Table 130f: FA/DET/02 ITD**

Interoperability Test Description			
<b>Identifier</b>	FA/DET/02		
<b>Test Objective</b>	Verify IP connectivity, SIP core/IMS configuration and proper routing, determination of the Functional Aliases activated for another User		
<b>Configuration(s)</b>	<ul style="list-style-type: none"> <li>• CFG_ONN_OTT-1 (clause 5.2)</li> <li>• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)</li> <li>• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</li> </ul>		
<b>References</b>	<ul style="list-style-type: none"> <li>• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> <li>• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])</li> <li>• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</li> </ul>		
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB</li> <li>• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)</li> <li>• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL</li> <li>• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)</li> <li>• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</li> </ul>		
<b>Pre-test conditions</b>	<ul style="list-style-type: none"> <li>• IP connectivity among all elements of the specific scenario</li> <li>• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers</li> <li>• UEs properly registered to the SIP core/IMS and MCPTT system</li> </ul>		
<b>Test Sequence</b>	<b>Step</b>	<b>Type</b>	<b>Description</b>
	1	stimulus	User 1 (mcptt_id_clientA@example.com) requests the determination of the FAs activated for User 2 (mcptt_id_clientB@example.com)
	2	check	SIP SUBSCRIBE with mcptt-info sent to the originating participating
	3	check	Originating Participating acknowledges (200 OK) the reception of the SUBSCRIBE
	4	check	SUBSCRIBE forwarded to the participating serving the targeted user (and <mcptt-calling-user-id> fulfilled)
	5	check	Participating acknowledges (200 OK) the reception of the SUBSCRIBE
	6	check	Originating participating receives the NOTIFY
	7	verify	Client gets the notification of the FAs activated (and status) for User 2

## 7.14 Interoperability Scenarios (IOP)

### 7.14.1 Effect of (de)affiliating another user during an ongoing group call [IOP/01]

During an ongoing (on-demand prearranged) group call among Users A, C and D, an MCPTT user -User A from vendor A- acting as operator affiliates a new user -MCPTT user B from vendor B- to that group in mandatory mode (refer to [AFFIL/CHANGE/02] for detailed signalling).

Upon affiliation notification the Controlling server carries out the late call entry procedure (refer to [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/07] for detailed signalling).

Other group members receive the update of the participants in the call upon their subscription to the conference event (refer to [CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/SUBCONF/01] for detailed signalling).

User B receives the audio of the ongoing group call in Group A.



After a while, same (original) MCPTT user de-affiliates User B using [AFFIL/CHANGE/02].

MCPTT Controlling removes User B from the ongoing group call following the procedures in clauses 10.1.1.4.4.3 and 6.3.3.1.5 in ETSI TS 124 379 [9].

The rest of the users get the updated list of participants.

Message Sequence Diagram

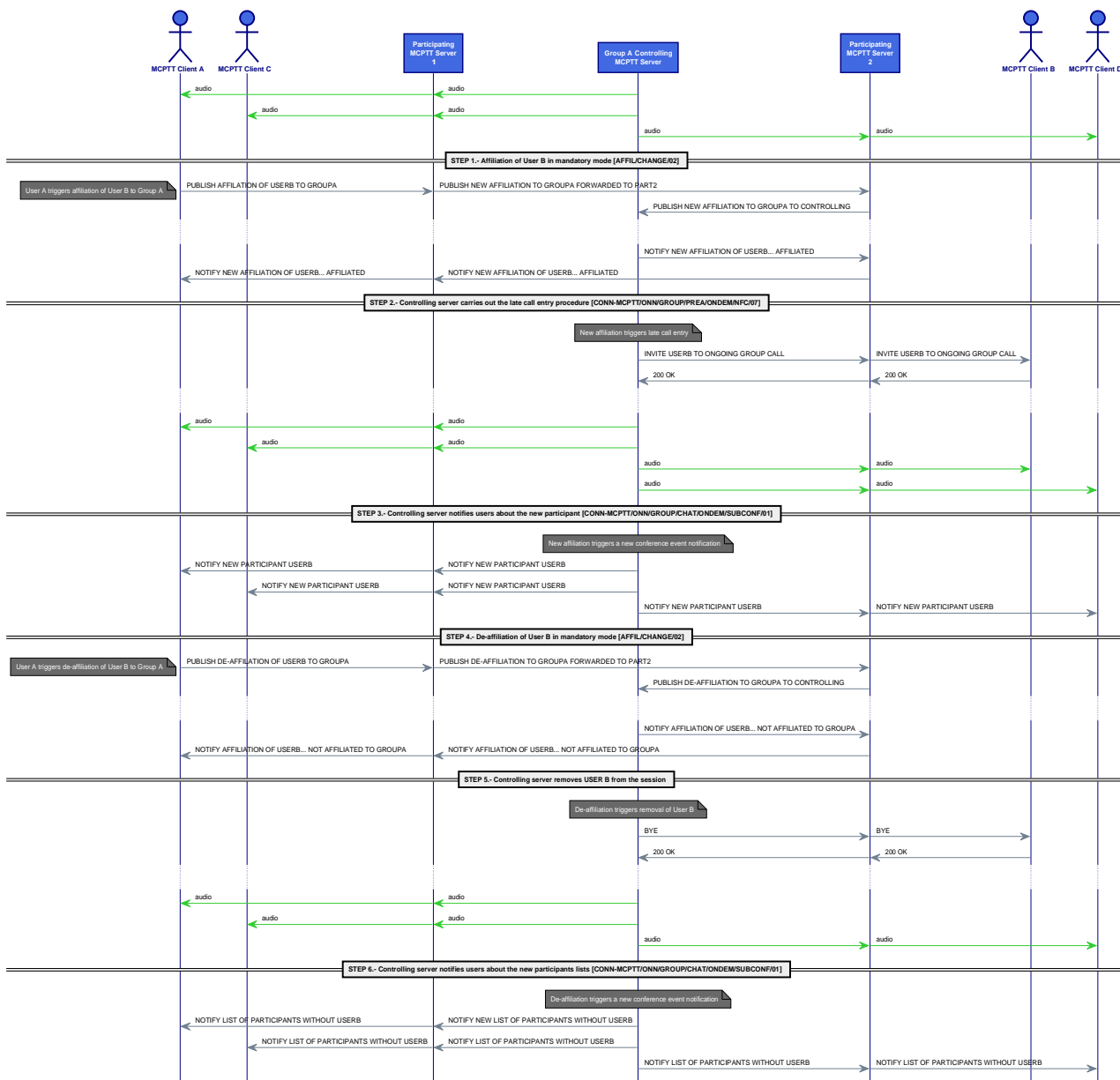


Figure 122g: IOP/01 Message Sequence

## 7.14.2 GEOFENCING [IOP/02]

Similar to [IOP/01] but it's the location the trigger to automatically (de)affiliate the user to the group.

As a precondition a group geographic area is pre-provisioned in the participating. The procedure for notification and affiliation is described in clause 6.3.3.1.22 in ETSI TS 124 379 [9]: upon receiving a location report the participating MCPTT function determines that the MCPTT Client has entered a pre-defined group geographic area and sends a MESSAGE accordingly.

The procedure regarding notification of entry is similar to the one described in [CONN-MCPTT/ONN/EMERG-ALERT/MSG/04] but the <associated-group-id> element is set to the MCPTT group ID of the group for which a pre-defined group (i.e. group A) geographic area has been entered or exited and <group-geo-area-ind> element is set to true.

Upon affiliation notification the Controlling server carries out the late call entry procedure (refer to [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/07] for detailed signalling).

Other group members receive the update of the participants in the call upon their subscription to the conference event (refer to [CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/SUBCONF/01] for detailed signalling).

User B receives the audio of the ongoing group call in Group A.

When leaving the area the participating sends the corresponding message to trigger the de-affiliation (and finally User B exits the group call).

Message Sequence Diagram

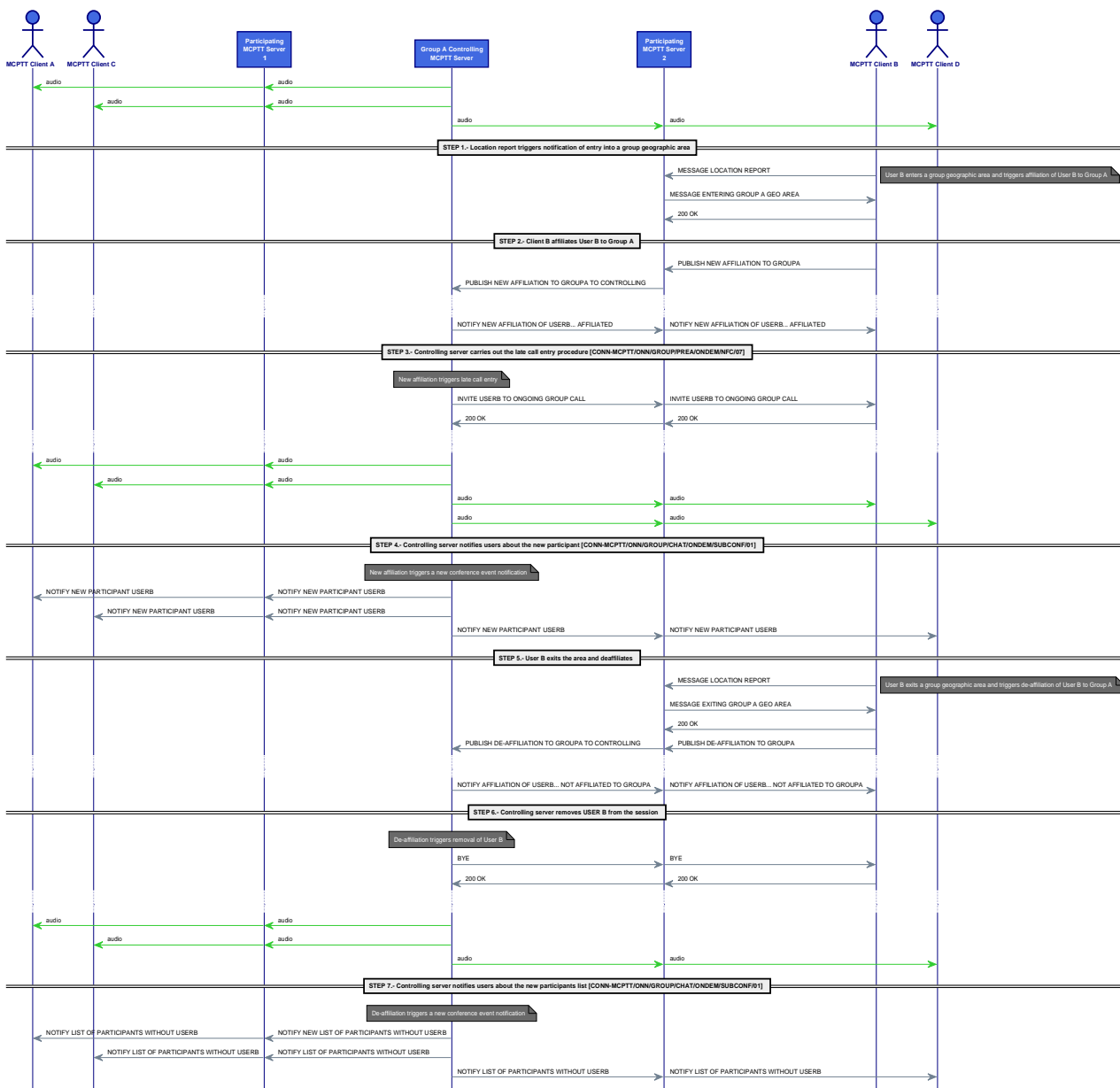


Figure 122h: IOP/02 Message Sequence

### 7.14.3 Complete group-regrouping procedure [IOP/03]

This test case comprises an adapted and extended version of clause A1 in ETSI TS 124 379 [9]. Clause A1 considers already created temporary group, so that no GMC/GMS signalling is included. In this TC, instead, GMS flows are described and 2 subgroups only will be included.

Therefore, 2 MCPTT systems will be considered where the 2<sup>nd</sup> non-controlling MCPTT controlling function is using the connection model in figure 5.3.2-5 A1 in ETSI TS 124 379 [9] (Mutual untrusted aid relationship between the primary MCPTT system and a partner MCPTT system involving the use of a non-controlling MCPTT function of an MCPTT group in the partner MCPTT system).

A new temporary group ones is created by regrouping the two existing ones by using the GMOP messages as defined in clause 6.3.14 in ETSI TS 124 481 [11].

NOTE 1: A valid temporary group id is assumed, so that no HTTP 409 (Conflict) mechanism is considered.

After exchanging the relevant GMOP messages between the GMS1 and GMS2 (owning subgroup A and supergroup T, and subgroup B respectively), GMS2 subscribes to GKTP of the supergroup and updates the MCPTT-GKTP document for the MCPTT subgroup B according to the received GMK-GKTP (upon reception of NOTIFY). Therefore, affiliated users of subgroup B should receive the update with the new key information.

Once the two subgroups are created MCPTT User A in system 1 initiates call to the temporary group.

After completion of the signalling users in system 1 and 2 can talk to each other.

NOTE 2: No call merge/split will be considered.

NOTE 3: Clause 7.3.3.3 in ETSI TS 133 180 [24] identifies the mechanism. More details available in clause 5.5.

Message Sequence Diagram

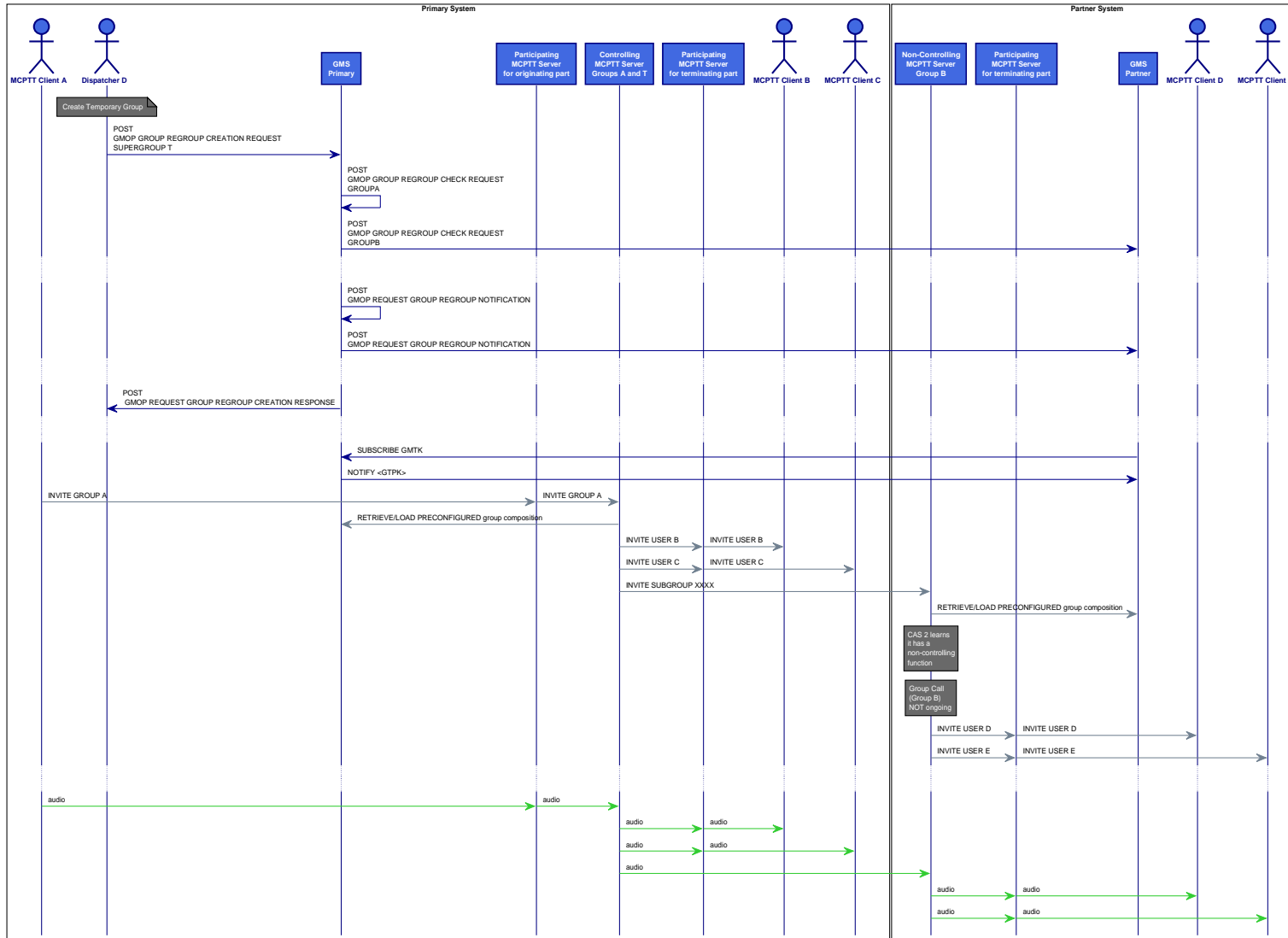


Figure 122i: IOP/03 Message Sequence

## 7.14.4 Effect of adding a user to a group and CSC subscriptions [IOP/04]

MCPTT client of User A is previously subscribed to the CMS documents (specially user profile). Participating is also subscribed to the User profiles of their User profiles of the users it handles.

The Dispatcher (D1) updates the group-A group document in the GMS by using the procedures in clause 6.3.4.2.1 in ETSI TS 124 481 [11]. Therefore, in order to update a group document, the GC in the dispatcher shall create an XML document of the application usage specified in clause 7.2.1 and shall send the XML document to the network according to procedures specified in section 7.1 of IETF RFC 4825 [29] "Create or Replace a Document".

From clause 5.7.3 in ETSI TS 133 180 [24] there are two possible options considered for the associated possible subscription to group document:

- a) "When users are added to a new or existing group they may be implicitly affiliated to that group" in which case "the user is automatically subscribed to group configuration updates from the GMS". The user shall be authorized for group management services to the GMS before the GMS provides the associated group management records and the GMK. Once the user is authorized, the GMS sends the group management record as well as the GMK to the UE.
- b) "When the user configuration record indicates the user has been added to a new or existing group but is required to explicitly affiliate to the group" the user "shall be authorized ... followed by a subscription to group updates from the GMS". Once the user is authorized and the subscription processed by the GMS, the GMS sends the group management record and the GMK to the UE. The user may then join in on the group communication immediately after receiving the group update and GMK.

Note that the so called "user configuration record" is related to the user profile as stated later in the same clause for the removal case "When a user is removed from a group, the UE receives a user profile update from the CMS indicating the user is no longer a member of the specified group ID(s)".

NOTE: The suitability of "unsolicited NOTIFY" and proposed two options needs to be checked.

Message Sequence Diagram

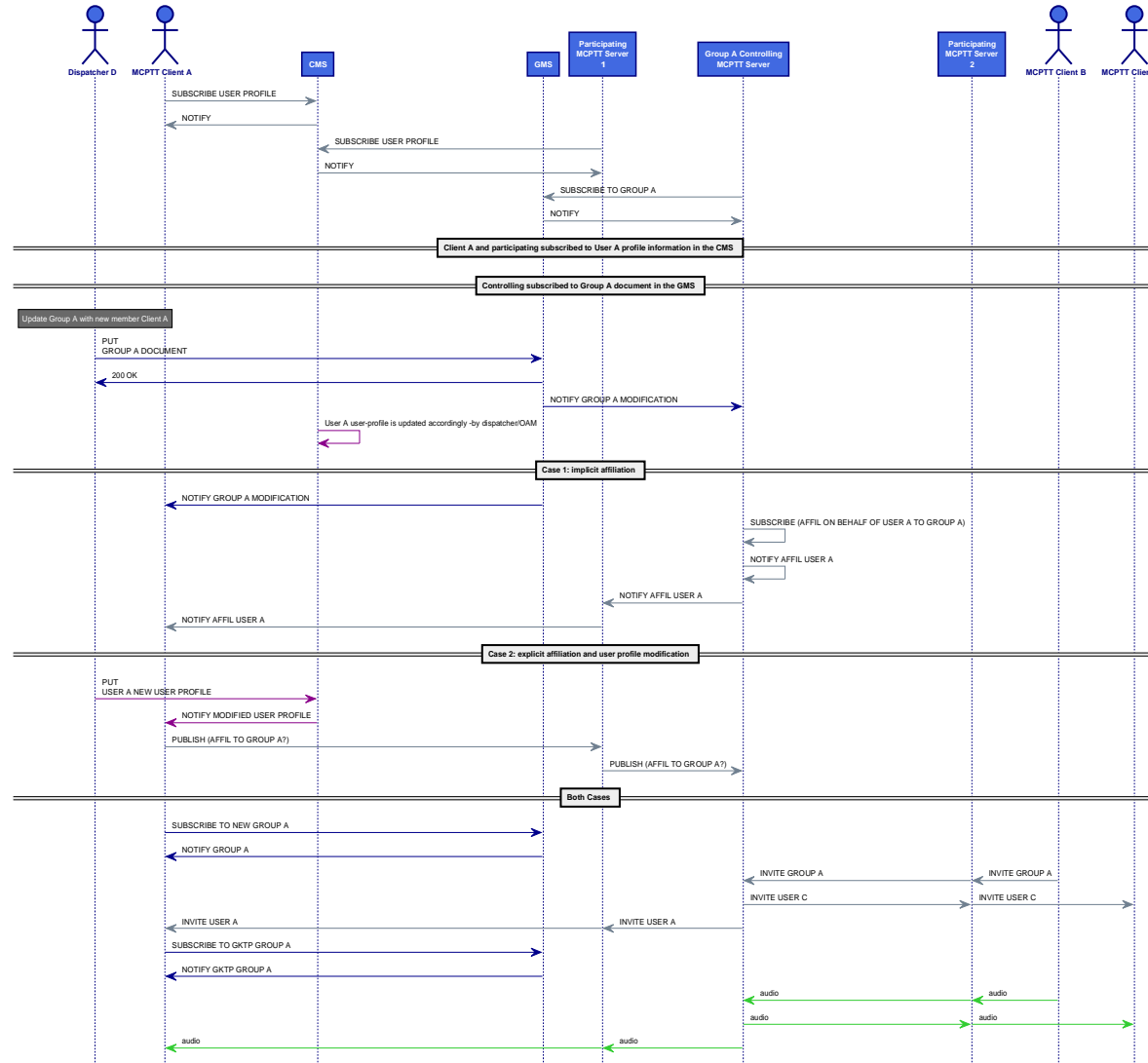


Figure 122j: IOP/04 Message Sequence

### 7.14.5 Missed call and private call callback [IOP/05]

In this TC, the MCPTT User A calls MCPTT User B using a private call in manual commencement mode (check [CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WFC/NFC/01]).

User B declines the call (check clause 6.2.3.2.1 in ETSI TS 124 379 [9]), the MCPTT User A sends a remote callback message to MCPTT User B (check [CONN-MCPTT/ONN/CALLBACK/SETUP/01]).

Finally, MCPTT User B fulfills the callback by calling User B (check [CONN-MCPTT/ONN/CALLBACK/FULFIL/01]).



Message Sequence Diagram

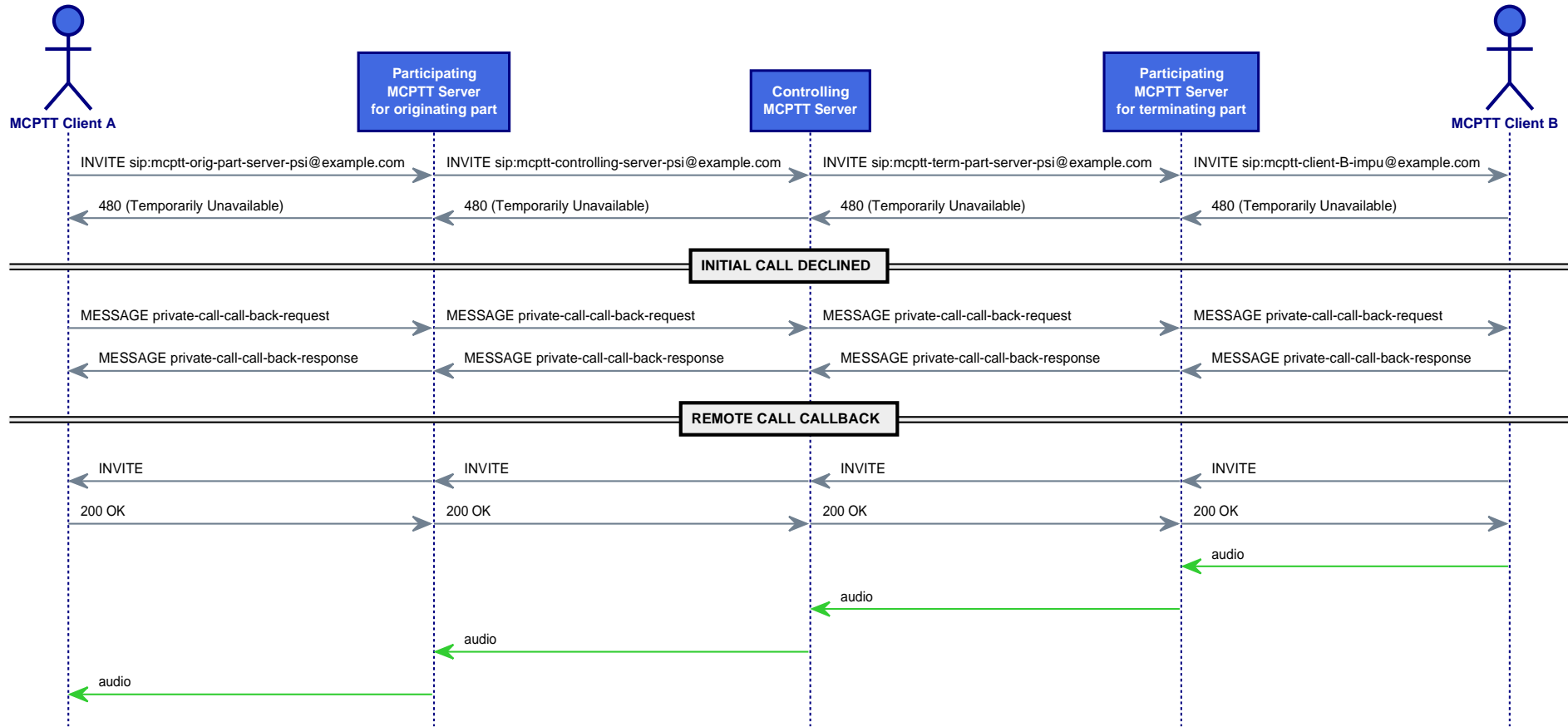


Figure 122k: IOP/05 Message Sequence

## 7.14.6 EMBMS switch from unicast to multicast and back to unicast [IOP/06]

In this case MCPTT User A involved in a group call with eMBMS available (check for example [EMBMS/ACTIVATEBEARER/WPRETMGI/01]).

When MCPTT User A enters the multicast area it notifies the Participating and later attaches to the Group Call related data flow for User A switched to multicast.

As soon as MCPTT User As stops receiving some of the eMBMS subchannels (i.e. by exiting the eMBMS coverage area) the data flow returns back to unicast.

In order to do so, according to clause 14.3.3.2 in ETSI TS 124 379 [9]:

- if the intention is to report that the MCPTT 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 MCPTT session identity in a <session-id> element; and
- if the intention is to report that the MCPTT client is no longer listening to general purpose MBMS subchannel, shall include the <general-purpose> element set to "false".

NOTE: If the MCPTT client reports that it is no longer listening to the general purpose MBMS subchannel it is implicitly understood that the MCPTT client no longer listens to any MBMS subchannel in ongoing conversations that the MCPTT client previously reported status "listening".

Once the participating gets this MESSAGE he will fork the media plane (and common FC messages) also to unicast for Client A.

Message Sequence Diagram

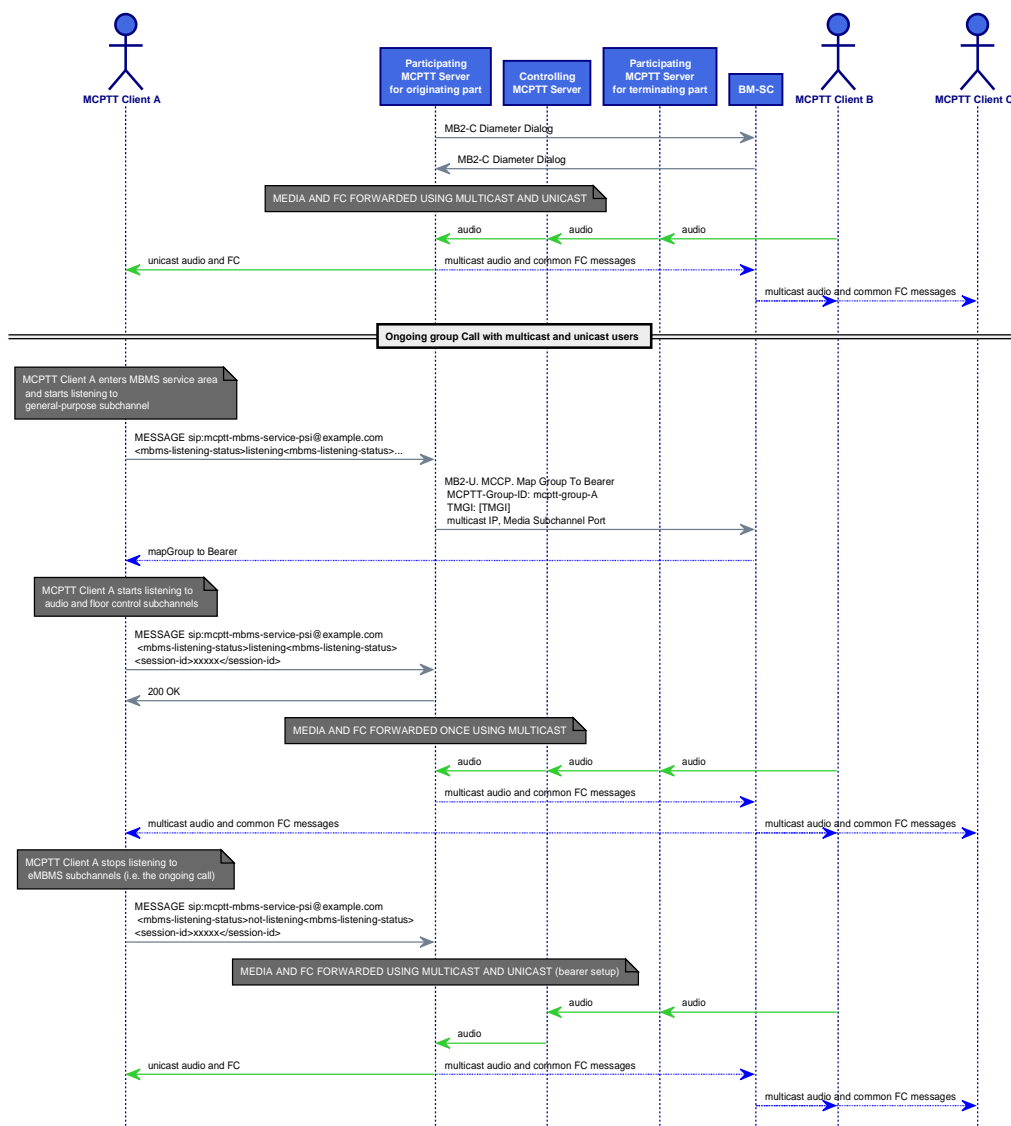


Figure 121: IOP/06 Message Sequence

7.14.7 one-to-server video push & one-from-server video pull operation [IOP/07]

MCVideo User A pushes a video to a server, so that he receives the <video-push-url> where the video will be made accessible.

Later the URL is shared to User B. According to the note of clause 12.2.2.4 in ETSI TS 124 281 [7] how an MCVideo client is informed the URL of the video file is out of scope of the TS. An approach similar to that in the File Distribution (but using a general purpose SDS message without a specific binary payload) could be applied.

Finally, MCVideo User B pulls the video from the server (using as <video-pull-url> the <video-push-url> received before).

## Message Sequence Diagram

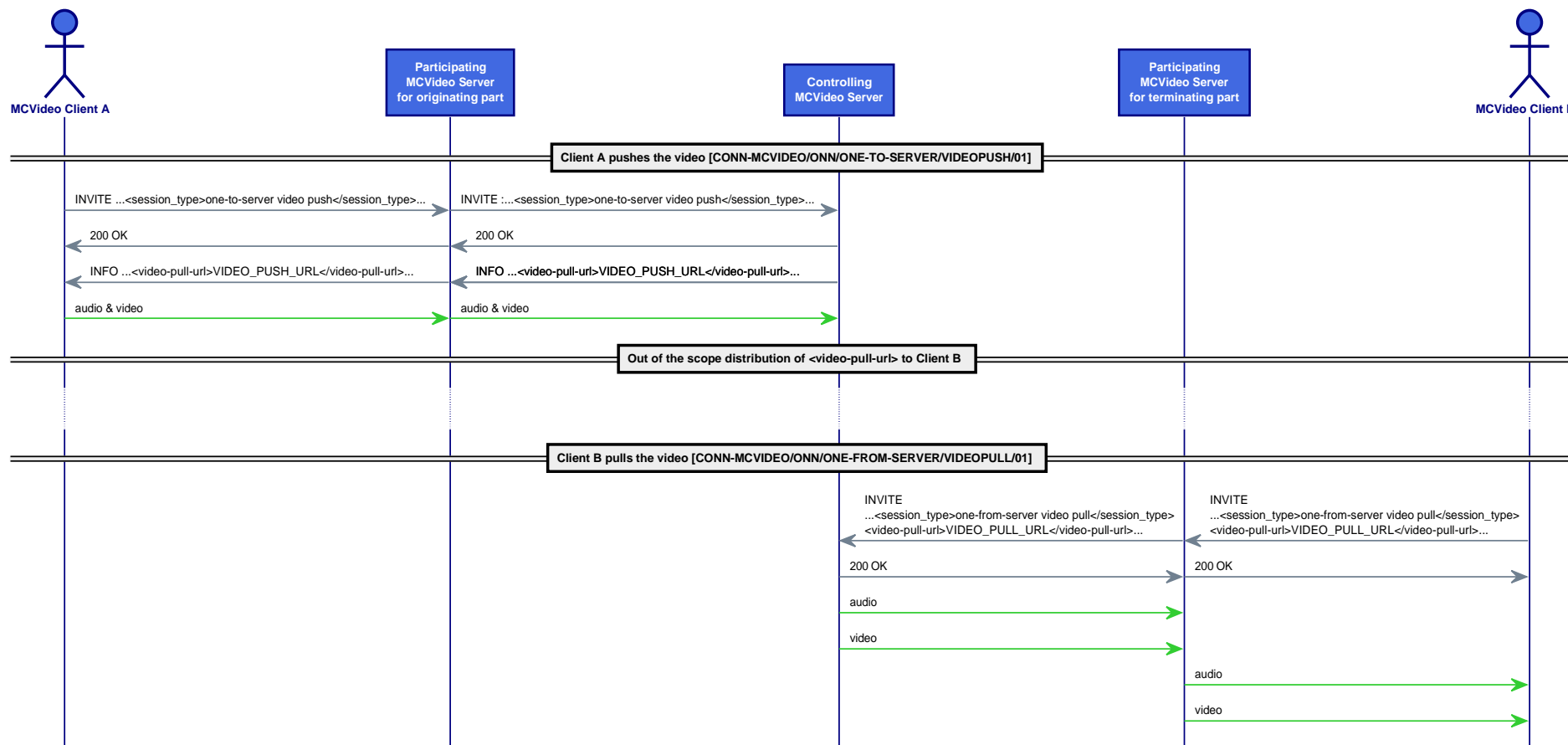


Figure 122m: IOP/07 Message Sequence

## 8 eMBMS complementary test cases (informative)

### 8.1 Introduction (disclaimer)

During the preparation of the test cases for the 2<sup>nd</sup> Plugtests the convenience of extensively testing eMBMS related interfaces and procedures was agreed. Such additional testing would however go beyond the overall approach followed for the rest of MCS features (even further than those test cases purely considered in 3GPP's normative TSs).

This informative clause collects a non-exhaustive list of additional eMBMS test cases that could be useful for interested eMBMS vendors and MCS server vendors. The resulting tests will not be part of the test cases officially analyzed (and reported with ETSI's TRT tool) nor considered in the Plugtests statistics. Furthermore, they will not be included in any later ETSI TR or official document out of the test case documents.

Furthermore note that some of the following test cases can be (at least partially) mapped to those in clause 7.6.

### 8.2 Extended eMBMS test cases

#### 8.2.1 TMGI allocation management [EMBMS-ADDITIONAL/MB2C/FUNCT/ALLOCTMGI/01]

TMGI allocation management:

- TMGI/TMGI range allocation
- TMGI expiration time renewal (free or in use)

#### 8.2.2 TMGI deallocation management [EMBMS-ADDITIONAL/MB2C/FUNCT/DEALLOCTMGI-/01]

TMGI deallocation management:

- No TMGI IE in request -> all TMGI deallocated
- Subset of TMGI in request
- Free TMGI
- In use TMGI: bearer termination, GNR (MBMS Bearer Status Indication) sent to GCS-AS

#### 8.2.3 Successful bearer activation [EMBMS-ADDITIONAL/MB2C/FUNCT/ACTIVATEBEARER-/01]

Successful bearer activation:

- With or without start time indication
- With or without TMGI/FlowId
- Check mandatory IEs: QoS (QCI, GBR, MBR, ARP), SAI list

#### 8.2.4 Successful bearer deactivation [EMBMS-ADDITIONAL/MB2c/FUNCT/DEACTBEARER-/01]

Successful bearer deactivation:

- Mandatory IEs: TMGI/FlowId

### 8.2.5 Successful bearer modification [EMBMS-ADDITIONAL/MB2C/FUNCT/MODBEARER/01]

Successful bearer modification:

- SAI list update
- ARP (PL/PVI/PCI) update

### 8.2.6 Management of TMGI expiration [EMBMS-ADDITIONAL/MB2C/FUNCT/TMGIEXP/01]

TMGI expiry management:

- GNR (TMGI Expiry Notification) sent to GCS-AS
- Free TMGI
- In use TMGI: bearer termination, information provided in GNR

### 8.2.7 Management of aggregated requests [EMBMS-ADDITIONAL/MB2C/FUNCT/AGGREQUEST-/01]

Multiple procedures in single GAR management:

- Allocate TMGI + activate bearer
- Allocate TMGI + activate multiple bearers
- Activate + deactivate multiple bearers
- All procedures

### 8.2.8 Management of Bearer Pre-emption [EMBMS-ADDITIONAL/MB2C/PRIO/PREEM/01]

Bearer pre-emption management:

- Existing bearer pre-empted by newly activated bearer

### 8.2.9 Management of Bearer Resumption [EMBMS-ADDITIONAL/MB2C/PRIO/RESUM/01]

Bearer pre-emption management:

- Pre-empted bearer resumption when other bearer is deactivated

### 8.2.10 MB2-C security using TLS over TCP [EMBMS-ADDITIONAL/MB2C/SECURITY/TLS-/01]

MB2-C security using TLS over TCP:

- TCP MB2-C connection
- TLS not enabled
- TLS enabled with server certificate management
- TLS enabled with server + client certificate management

### 8.2.11 MB2-C security using DTLS over SCTP [EMBMS-ADDITIONAL/MB2C/SECURITY/DTLS-/01]

MB2-C security using DTLS over SCTP:

- SCTP MB2-C connection
- DTLS not enabled
- DTLS enabled with server certificate management
- DTLS enabled with server + client certificate management

### 8.2.12 Restoration procedure management [EMBMS-ADDITIONAL/MB2C/ROBUSTNESS/RES-TORATION/01]

Restoration procedure management:

- BM-SC Restart
- GCS-AS Restart
- MB2-C path failure (transient/non-transient)

### 8.2.13 TMGI allocation failure [EMBMS- ADDITIONAL/MB2C/ROBUSTNESS/ALLOCATE/TMGI-/01]

TMGI allocation failure:

- No more TMGI available
- Renewal of TMGI not owned by GCS-AS

### 8.2.14 TMGI deallocation failure [EMBMS- ADDITIONAL/MB2C/ROBUSTNESS/DEALLOCATE/TMGI/01]

TMGI deallocation failure:

- TMGI not owned by GCS-AS

### 8.2.15 Bearer activation failure [EMBMS- ADDITIONAL/MB2c/ROBUSTNESS/ACTIVATE/BEARER-/01]

Bearer activation failure:

- Wrong QoS values
- Missing mandatory IE (QoS, SAI list)
- Unknown SAI for PLMN - If TMGI provided:
  - Unknown TMGI/FlowId
  - Already used FlowId
- SAI overlap with other bearer using same TMGI - If TMGI not provided:
  - No TMGI available
  - Not enough radio resources

### 8.2.16 Bearer deactivation failure [EMBMS- ADDITIONAL/MB2C/ROBUSTNESS/DEACTIVATE-/BEARER/01]

Bearer deactivation failure:

- Missing mandatory IE (TMGI/FlowId)
- Unknown bearer (TMGI/FlowId)

### 8.2.17 Bearer modification failure [EMBMS- ADDITIONAL/MB2C/ROBUSTNESS/MODIFY/BEARER-/01]

Bearer modification failure:

- Missing mandatory IE (TMGI/FlowId + ARP or SAI list)
- Unknown bearer (TMGI/FlowId)
- Unknown new SAI
- SAI overlap with other bearer for new SAI

### 8.2.18 Multiple GCS-AS management [EMBMS-ADDITIONAL/MB2C/LOAD/MUL-TIPLEGCS-/01]

Multiple GCS-AS management:

- Two GCS-AS connected to same BM-SC
- Same or different PLMN
- Check all MB2-C procedures (alloc/dealloc TMGI, activate/deactivate/modify bearer) run properly for each GCS-AS

### 8.2.19 Activation of multiple (100) bearers [EMBMS-ADDITIONAL/MB2C/LOAD/100BEARER-/01]

Activate 100 bearers simultaneously (10 per second during 10 seconds):

- No error occurs

---

## 9 Observers scenarios

### 9.1 Introduction

The so called "Observers scenarios" were introduced during the 4<sup>th</sup> MCX Plugtest so that relevant stakeholders (mostly governments/public safety network operators) registered as observers could provide feedback about more complex test cases, closer to daily operations and reflecting the demands from real users.

Most of the proposed observers scenarios can be mapped to existing test cases but either, they entail a sequence or combination of several different test cases or/and involve more participants during the test sessions. Therefore, instead of a detailed analysis of the interactions with references to the relevant sections of the TSs and Interoperability Test Description tables following the style of clause 7, a higher level description and sequence diagrams identifying the flows will be included in clause 9.



## 9.2 Common remarks

During the discussions towards the definition of the base set of scenarios there was a consensus among the observers regarding the need to show an operation as realistic as possible. That would mean avoiding Over-the-Top configuration (CFG\_ONN\_OTT-1) and using always MCX clients running on LTE UEs connected to a live MC LTE network (including MC-QCIs and eMBMS when applicable). Therefore, unicast and multicast MC LTE configuration modes (CFG\_ONN\_UNI-MC-LTE-1 and CFG\_ONN\_MULTI-MC-LTE-1 respectively) should be used.

Similarly, once proper registration, authorization and key exchange mechanism were tested, any later scenarios would also require proper security mechanisms in place (including AAA and ciphering).

## 9.3 Emergency call [OS1]

The scenario comprises the following steps:

- User initiates emergency private call in manual commencement mode
- Call is answered by another user
- Call terminated

Message Sequence Diagram

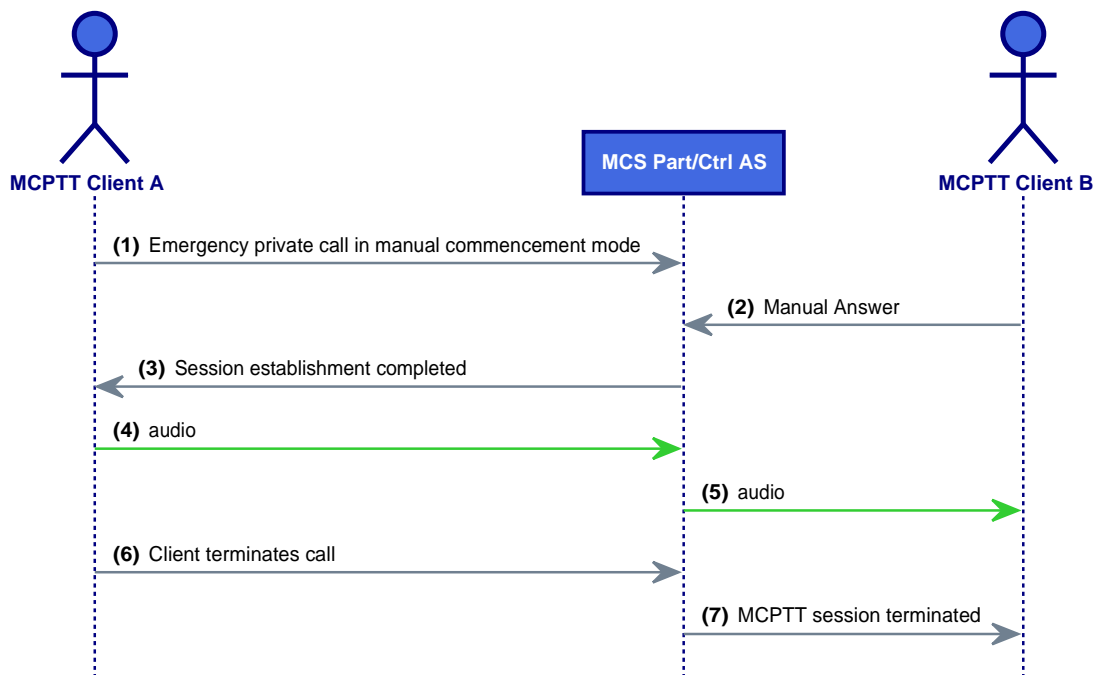


Figure 123: OS1 Message Sequence

## 9.4 Emergency call handling [OS2]

The scenario comprises the following steps:

- Ongoing MCPTT group call
- While one participant is talking, another group participant initiates emergency call
- Emergency alert being sent
- Group call converted to emergency call and emergency user gets the Floor

- Different user cancels alert and cancels the group state

### Message Sequence Diagram

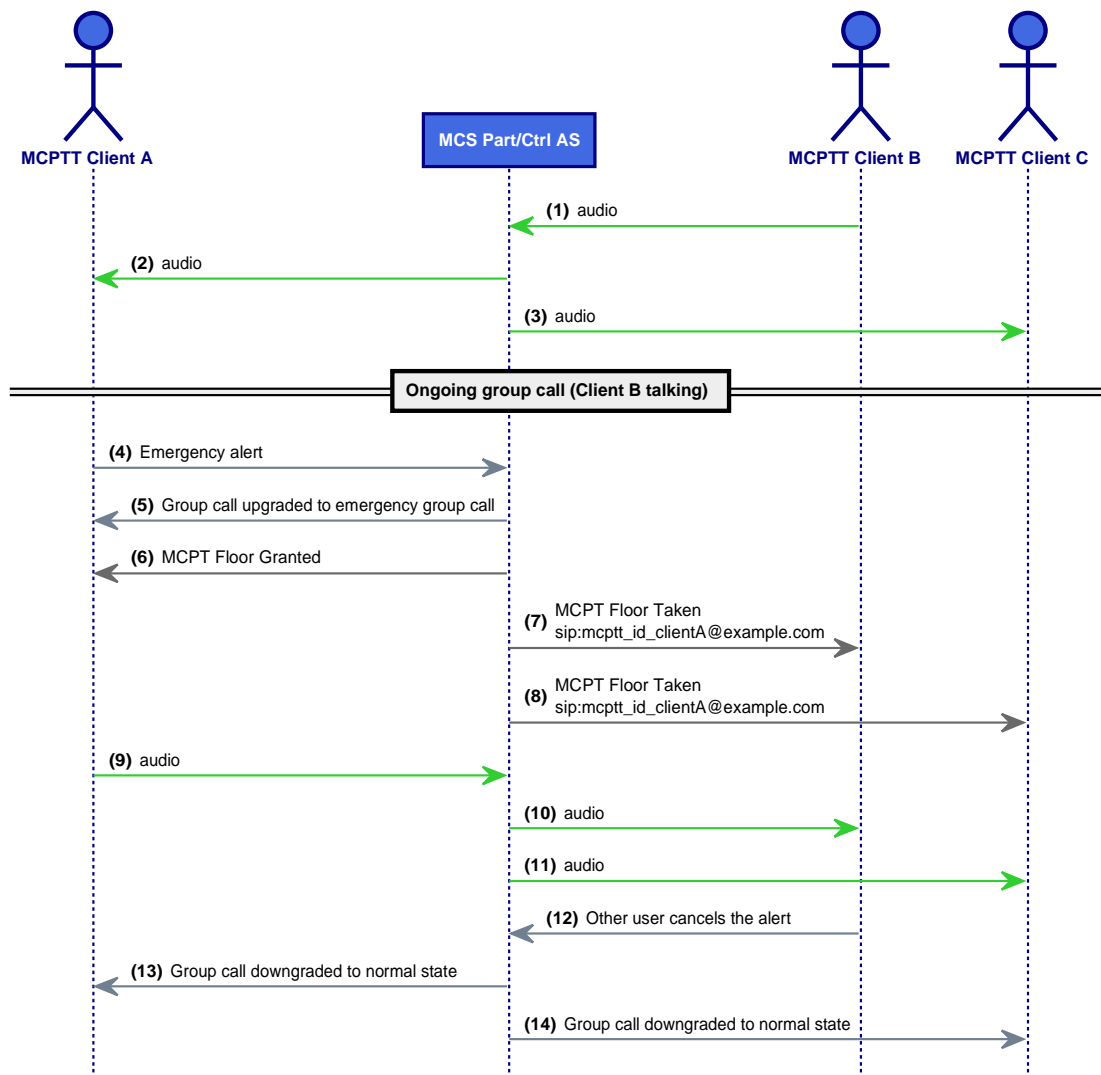


Figure 124: OS2 Message Sequence

## 9.5 Encrypted private call [OS3]

The scenario comprises the following steps:

- User initiates private call in automatic commencement mode
- Call is received by another user
- Call terminated based on hang timer

## Message Sequence Diagram

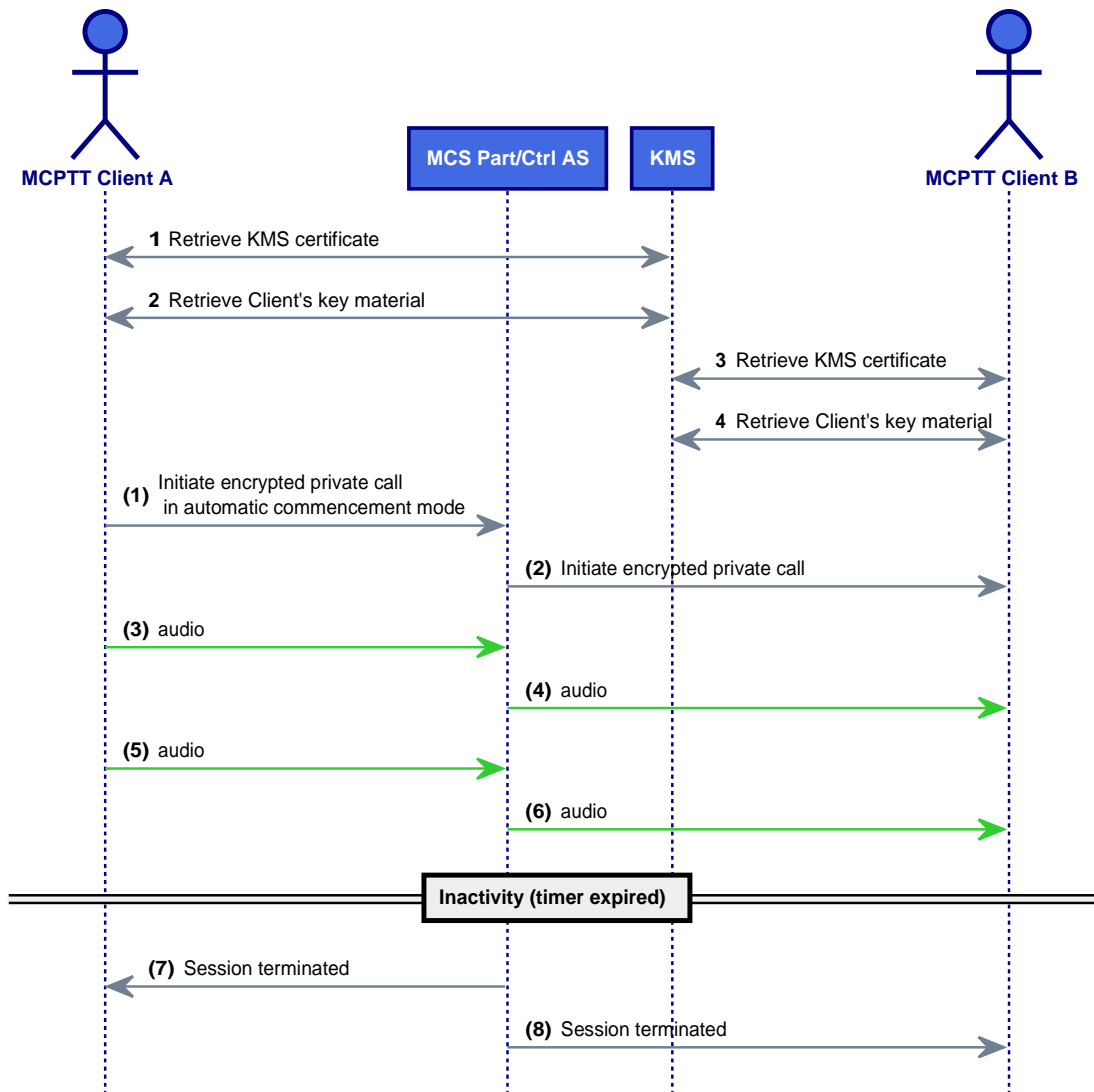


Figure 125: OS3 Message Sequence

## 9.6 eMBMS MCPTT [OS4.1]

The scenario considers a ciphered MCPTT group call using eMBMS (therefore CFG\_ONN\_MULTI-MC-LTE-1 is to be used).

## Message Sequence Diagram

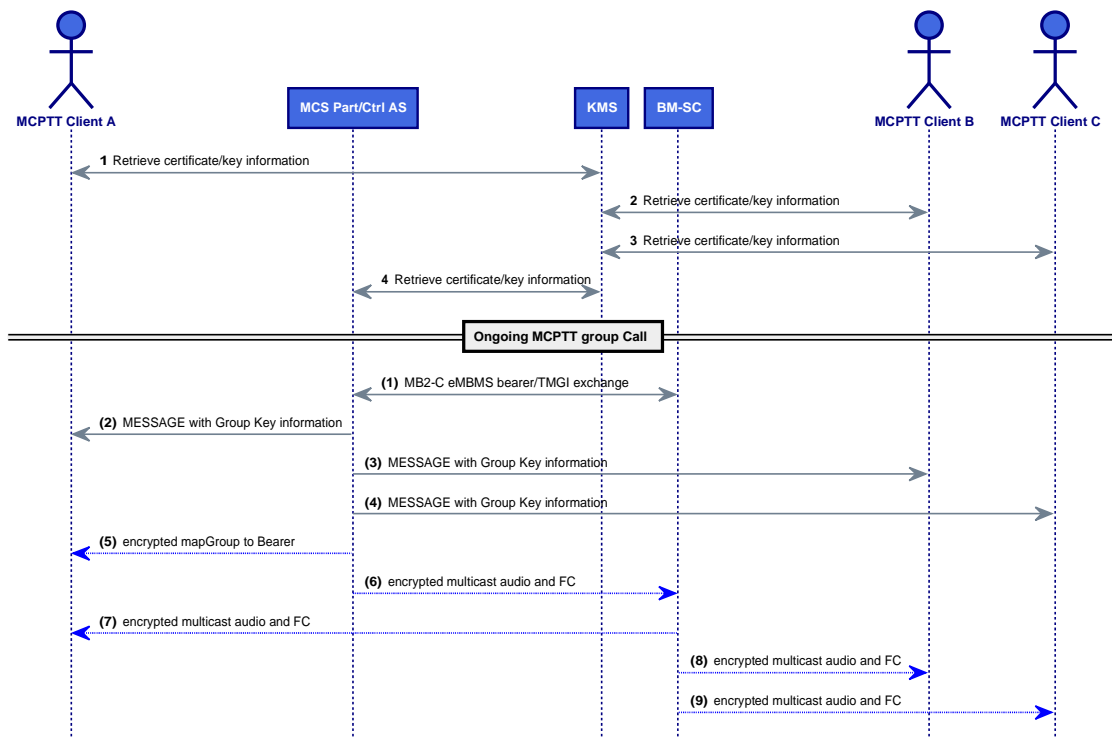


Figure 126: OS4.1 Message Sequence

## 9.7 eMBMS MCVideo [OS4.2]

The scenario considers a ciphered MCVideo group call using eMBMS (therefore CFG\_ONN\_MULTI-MC-LTE-1 is to be used).

## Message Sequence Diagram

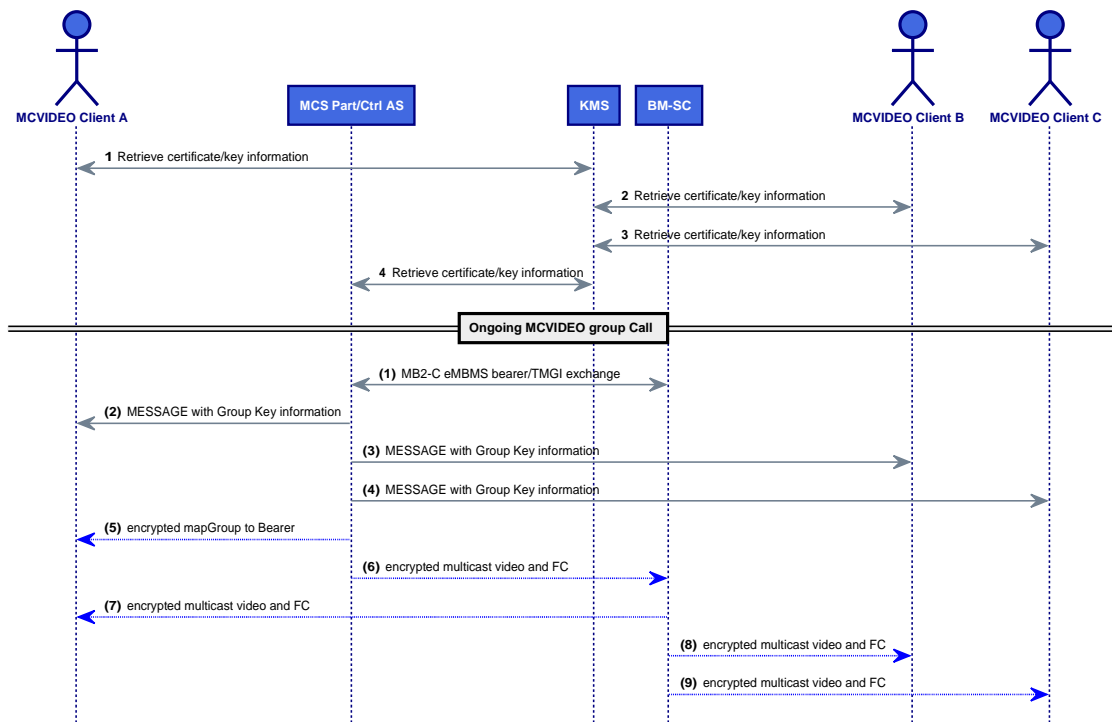


Figure 127: OS4.2 Message Sequence

## 9.8 Switching on [OS5]

The scenario comprises the following steps:

- LTE Registration - Authentication - Location update
- MC Service user authentication and authorization
- Update of user profile and group configuration (Selection of user profile)
- Affiliation

## Message Sequence Diagram

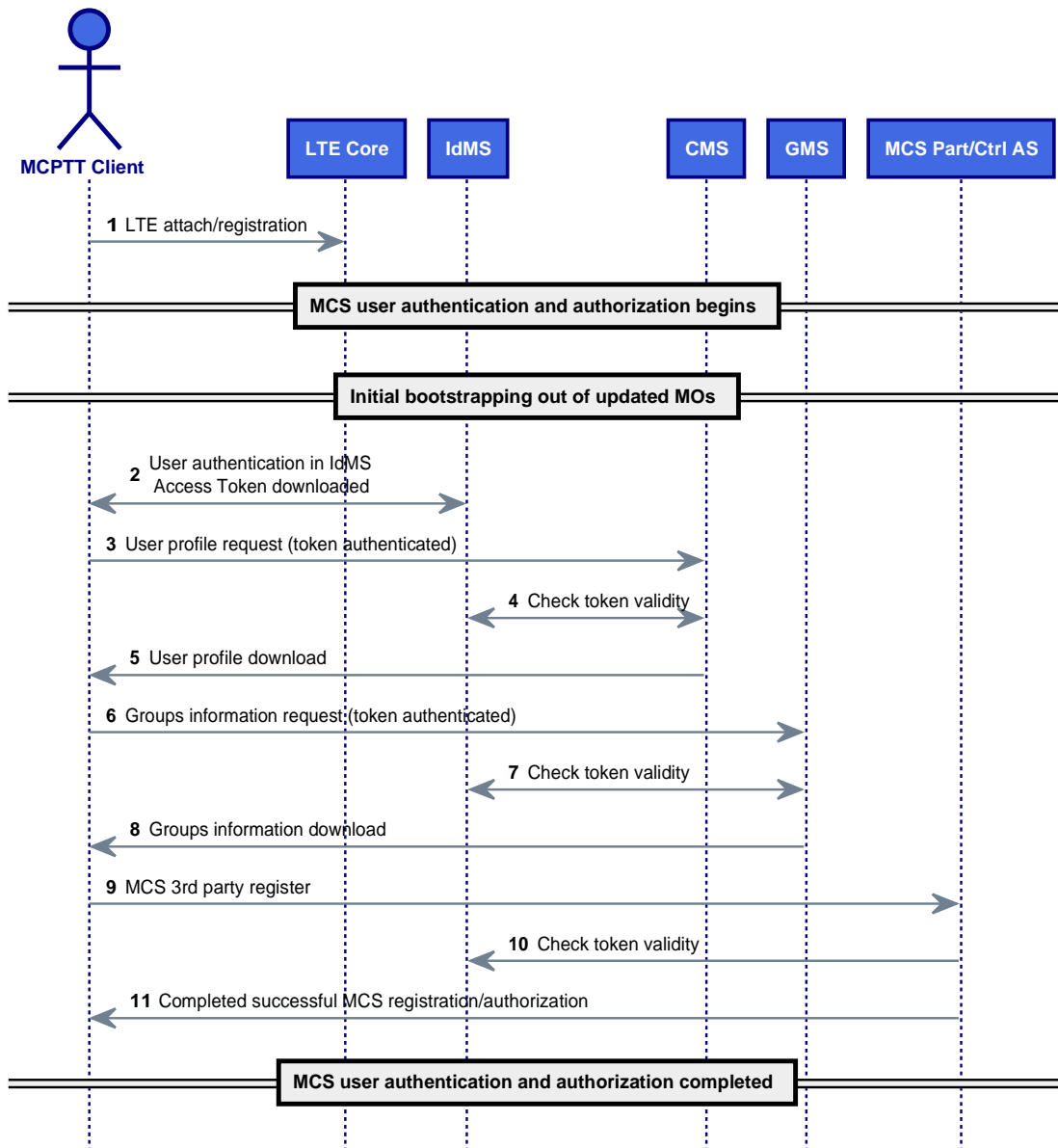


Figure 128: OS5 Message Sequence

## 9.9 Encrypted MCPTT group call [OS6]

The scenario comprises the following steps:

- Group Call set-up:
  - Pre-arranged Group Call
  - Chat Group Call
- Floor Control with speech duration of several seconds between multiple (up to 30) participants
- MCS solution uses the standardized MC-QCIs
- During call an extra participant affiliates to the group using late entry and receives the call
- Call ends based on hang timer

## Message Sequence Diagram

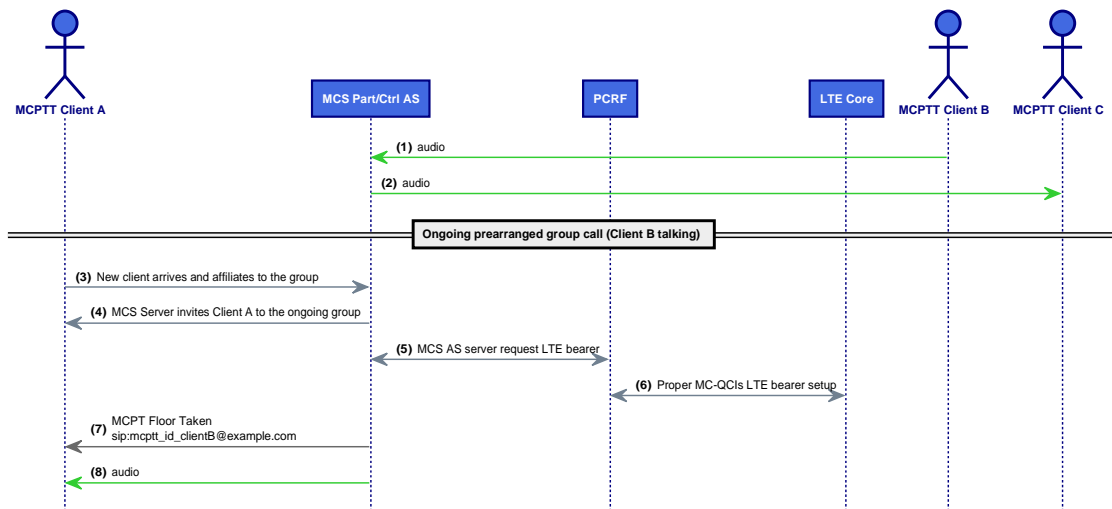


Figure 129: OS6 Message Sequence

## 9.10 Enhanced status [OS7.1]

This scenario is FFS since no Stage 3 protocol specifications were available for the considered 3GPP Release.

## 9.11 MCDATA SDS [OS7.2]

This scenario comprises transmitting a SDS message from one user to another (see clause 7.2.39).

## Message Sequence Diagram

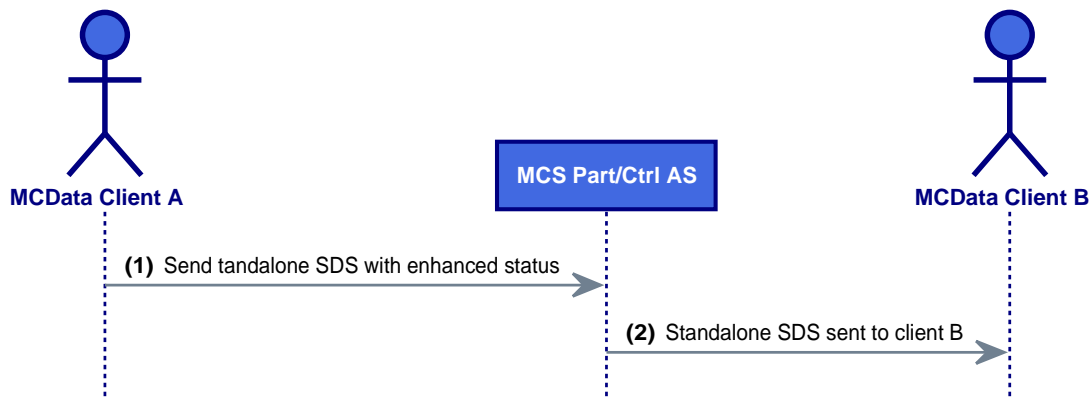


Figure 130: OS7.2 Message Sequence

## 9.12 Encrypted MCVideo Group Call [OS8]

The scenario comprises the following steps (over Unicast MC LTE):

- Video group call set-up by one user
- The stream is received by multiple user
- MCS solution uses the standardized MC-QCIs

- Manual call termination
- Message Sequence Diagram

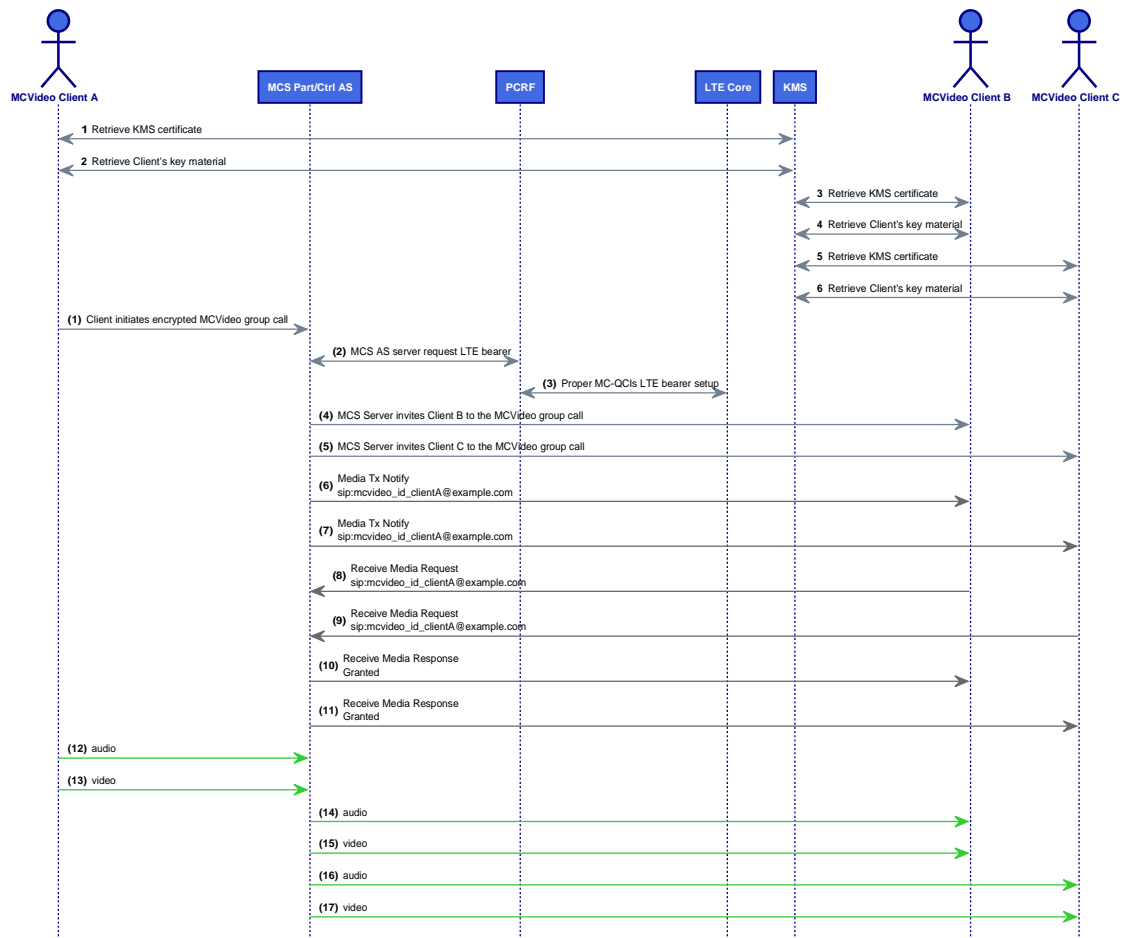


Figure 131: OS8 Message Sequence

## 9.13 Parallel MCPTT and MCVIDEO [OS9]

The scenario comprises the following steps (over Unicast MC LTE):

- Setup MCPTT group call
- Floor Control with speech duration of several seconds between multiple participants
- Video group call set-up by one user
- The stream is received by multiple users
- MCPTT and MCVIDEO calls in parallel
- Manual call termination of MCVIDEO
- MCPTT Call ends based on hang timer



Message Sequence Diagram

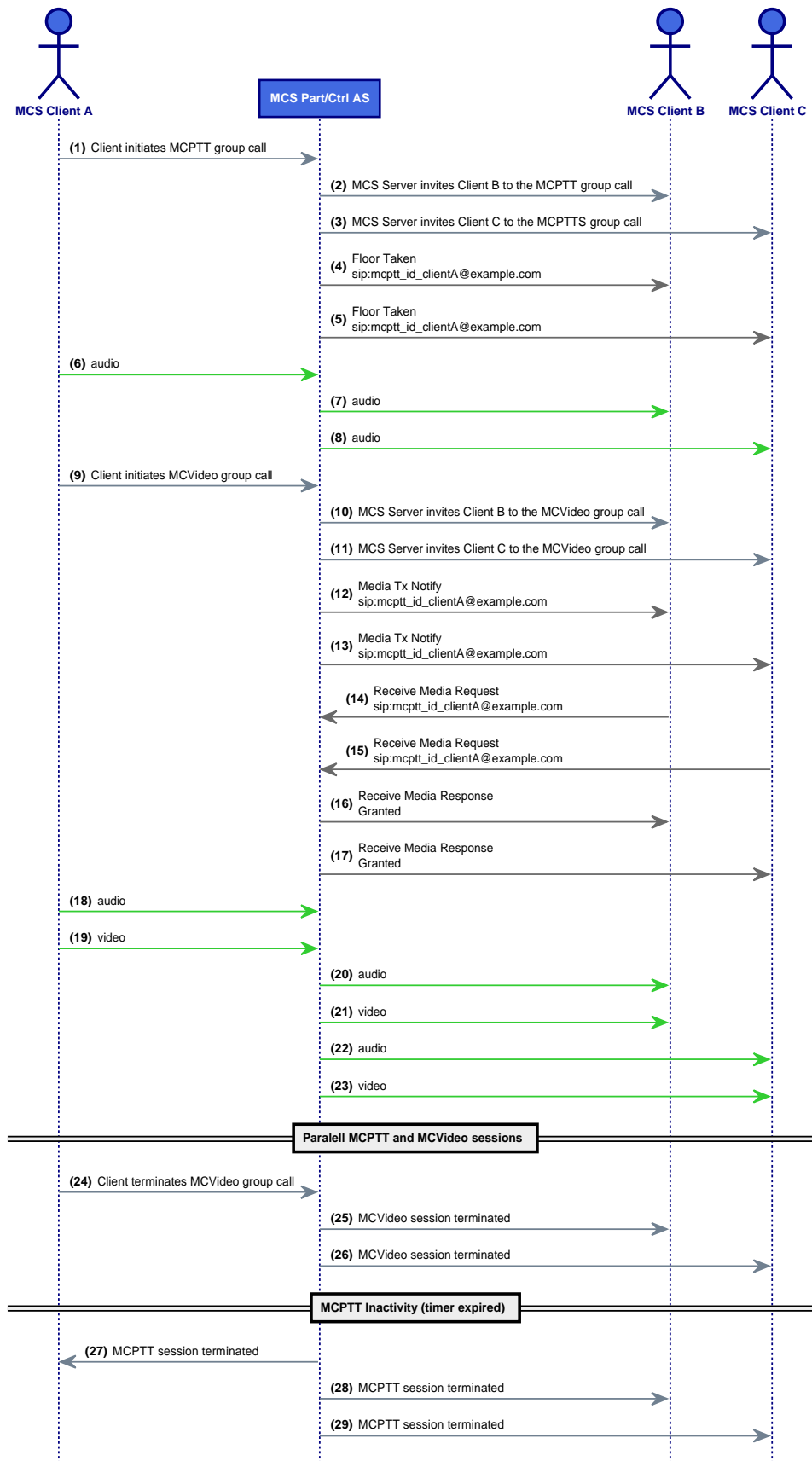


Figure 132: OS9 Message Sequence

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## Annex A (informative): Bibliography

- 3GPP TR 23.779 (V13.0.0): "Study on application architecture to support Mission Critical Push To Talk over LTE (MCPTT) services (Release 13)", September 2015.
- ETSI TR 124 980 (V13.0.1): "LTE; Minimum Requirements for support of MCPTT Service over the Gm reference point (3GPP TR 24.980 version 13.0.1 Release 13)".
- 3GPP TR 26.879 (V13.0.0): "Mission Critical Push To Talk (MCPTT); Media, codecs and Multimedia Broadcast/Multicast Service (MBMS) enhancements for MCPTT over LTE (Release 13)", March 2016.
- ETSI TS 129 283 (V14.3.0): "LTE; Universal Mobile Telecommunications System (UMTS); Diameter data management applications (3GPP TS 29.283 version 14.3.0 Release 14)".
- ETSI TS 123 468 (V14.0.0): "LTE; Group Communication System Enablers for LTE (GCSE-LTE); Stage 2 (3GPP TS 23.468 version 14.0.0 Release 14)".
- ETSI TS 124 483 (V14.3.0): "LTE; Mission Critical Services (MCS) Management Object (MO) (3GPP TS 24.483 version 14.3.0 Release 14)".

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# History

<b>Document history</b>		
V1.1.1	October 2017	Publication
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