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TECHNICAL SPECIFICATION

Plugtests^{TM} scenarios
for Mission Critical Services

Reference
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Foreword

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

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.

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.

Referenced documents which are not found to be publicly available in the expected location might be found at https://docbox.etsi.org/Reference/.

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

[1] ETSI TS 122 179 (V17.1.0): "LTE; 5G; Mission Critical Push to Talk (MCPTT); Stage 1 (3GPP TS 22.179 version 17.1.0 Release 17)".

[2] Void.

[3] ETSI TS 123 281 (V17.6.0): "LTE; Functional architecture and information flows to support Mission Critical Video (MCVideo); Stage 2 (3GPP TS 23.281 version 17.6.0 Release 17)".

[4] ETSI TS 123 379 (V17.10.0): "LTE; Functional architecture and information flows to support Mission Critical Push To Talk (MCPTT); Stage 2 (3GPP TS 23.379 version 17.10.0 Release 17)".

[5] Void.

[6] ETSI TS 124 229 (V17.12.0): "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 17.12.0 Release 17)".

[7] ETSI TS 124 281 (V17.9.0): "LTE; Mission Critical Video (MCVideo) signalling control; Protocol specification (3GPP TS 24.281 version 17.9.0 Release 17)".

[8] ETSI TS 124 282 (V17.9.0): "LTE; Mission Critical Data (MCData) signalling control; Protocol specification (3GPP TS 24.282 version 17.9.0 Release 17)".

[9] ETSI TS 124 379 (V17.12.0): "LTE; Mission Critical Push To Talk (MCPTT) call control; Protocol specification (3GPP TS 24.379 version 17.12.0 Release 17)".

[10] ETSI TS 124 380 (V17.7.0): "LTE; Mission Critical Push To Talk (MCPTT) media plane control; Protocol specification (3GPP TS 24.380 version 17.7.0 Release 17)".

[11] ETSI TS 124 481 (V17.6.0): "LTE; Mission Critical Services (MCS) group management; Protocol specification (3GPP TS 24.481 version 17.6.0 Release 17)".

[12] ETSI TS 124 482 (V17.1.0): "LTE; Mission Critical Services (MCS) identity management; Protocol specification (3GPP TS 24.482 version 17.1.0 Release 17)".

[13] Void.

[14] ETSI TS 124 484 (V17.9.0): "LTE; Mission Critical Services (MCS) configuration management; Protocol specification (3GPP TS 24.484 version 17.9.0 Release 17)".

[15] ETSI TS 124 581 (V17.2.0): "LTE; Mission Critical Video (MCVideo) media plane control; Protocol specification (3GPP TS 24.581 version 17.2.0 Release 17)".

[16] Void.

[17] ETSI TS 124 582 (V17.2.0): "LTE; Mission Critical Data (MCData) media plane control; Protocol specification (3GPP TS 24.582 version 17.2.0 Release 17)".

[18] ETSI TS 126 179 (V17.0.0): "LTE; Mission Critical Push To Talk (MCPTT); Codecs and media handling (3GPP TS 26.179 version 17.0.0 Release 17)".

[19] ETSI TS 126 346 (V17.3.0): "Universal Mobile Telecommunications System (UMTS); LTE; 5G; Multimedia Broadcast/Multicast Service (MBMS); Protocols and codecs (3GPP TS 26.346 version 17.3.0 Release 17)".

[20] ETSI TS 129 212 (V17.3.0): "Universal Mobile Telecommunications System (UMTS); LTE; 5G; Policy and Charging Control (PCC); Reference points (3GPP TS 29.212 version 17.3.0 Release 17)".

[21] ETSI TS 129 214 (V17.5.0): "Universal Mobile Telecommunications System (UMTS); LTE; 5G; Policy and charging control over Rx reference point (3GPP TS 29.214 version 17.5.0 Release 17)".

[22] Void.

[23] ETSI TS 129 468 (V17.1.0): "Universal Mobile Telecommunications System (UMTS); LTE; Group Communication System Enablers for LTE (GCSE-LTE); MB2 reference point; Stage 3 (3GPP TS 29.468 version 17.1.0 Release 17)".

[24] ETSI TS 133 180 (V17.9.0): "LTE; Security of the Mission Critical (MC) service (3GPP TS 33.180 version 17.9.0 Release 17)".

[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)".

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

[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 IETF RFC 6665".

[36] OMA-TS-XDM-Core-V2-1-20120403-A: "XML Document Management (XDM) Specification,V2.1".

[37] OMA-TS-XDM-Group-V1-1-1-20170124-A: "Group XDM Specification, V1.1.1".

[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)".

[44] OMA-TS-REST-NetAPI-NMS-V1-0-20190528-C: "RESTful Network API for Network Message Storage".

[45] OMA-TS-REST-NetAPI-NotificationChannel-V1-0-20200319-C: "RESTful Network API for Notification Channel".

[46] ETSI TS 129 513 (V17.12.0): "5G; 5G System; Policy and Charging Control signalling flows and QoS parameter mapping; Stage 3 (3GPP TS 29.513 version 17.12.0 Release 17)".

[47] ETSI TS 129 213 (V17.2.0): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; Policy and charging control signalling flows and Quality of Service (QoS) parameter mapping (3GPP TS 29.213 version 17.2.0 Release 17)".

[48] ETSI TS 129 379 (V17.5.0): "LTE ;5G ; Mission Critical Push To Talk (MCPTT) call control interworking with Land Mobile Radio (LMR) systems; Stage-3 (3GPP TS 29.379 version 17.5.0 Release 17)".

[49] ETSI TS 129 380 (V17.0.0): "LTE; 5G; Mission Critical Push To Talk (MCPTT) media plane control interworking with Land Mobile Radio (LMR) systems; Stage 3 (3GPP TS 29.380 version 17.0.0 Release 17)".

[50] ETSI TS 129 522: "5G; 5G System; Network Exposure Function Northbound APIs; Stage 3 (3GPP TS 29.522)".

[51] ETSI TS 129 122: "Universal Mobile Telecommunications System (UMTS); LTE; 5G; T8 reference point for Northbound APIs (3GPP TS 29.122)".

[52] ETSI TS 123 682: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Architecture enhancements to facilitate communications with packet data networks and applications (3GPP TS 23.682)".

[53] ETSI TS 123 502: "5G; Procedures for the 5G System (5GS) (3GPP TS 23.502)".

[54] ETSI TS 126 531: "5G; Data Collection and Reporting; General Description and Architecture (3GPP TS 26.531)".

[55] ETSI TS 124 483: "LTE; Mission Critical Services (MCS) Management Object (MO) (3GPP TS 24.483)".

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.

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:

3GPP	3rd Generation Partnership Project
AAA	Authentication Authorization Accounting
ACK	ACKnowledgement
AFFIL	AFFILiation
AMR	Adaptative Multi-Rate audio codec
AMR-WB	Adaptative Multi-Rate audio codec Wideband
API	Application Program Interface
APN	Access Point Name
ARP	Address Resolution Protocol
AS	Application Server
AUID	Application Unique ID
AVP	Attribute-Value Pairs
BM-SC	Broadcast Multicast - Service Centre
BMSC	Broadcast Multicast Service Centre
CAS	Controlling Application Server
CCTV	Closed-Circuit Television
CMC	Configuration Management Client
CMS	Configuration Management Server
CONN	CONNectivity
CSC	Common Services Core
CSK	Client-Server Key
DL	DownLink
DNN	Data Network Name
DTLS	Datagram Transport Layer Security
DUT	Device Under Test
e2e	end-to-end
eMBMS	evolved Multimedia Broadcast Multicast Service
EMBMS	evolved Multimedia Broadcast/Multicast Service
EPC	Evolved Packet Core
EPS	Evolved Packet System
ETAG	Entity Tag
EUT	Equipment Undert Test
EUTRAN	Evolved Universal Terrestrial Radio Access Network
EVS	Enhanced Voice Services
FA	Functional Alias
FC	Floor Control
FD	File Distribution
FEC	Forward Error Correction
FFS	For Further Study
FRMCS	Future Railway Mobile Communication System
GAR	GCS-Action-Request
GBR	Guaranteed Bit Rate
GC	General Client
GCS	Group Call Server

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
GRE	Generic Routing Encapsulation
GW	GateWay
HTTP	Hyper Text Transfer Protocol
ICE	In Case of Emergency
ID	IDentifier
IdMS	Identity Management Server
IDMS	IDentity Management System
IE	Information Element
IFS	Interoperable Functions Statement
IMCX	Inter MCX
IMPU	IP Multimedia PUblic identity
IMS	IP Multimedia Subsystem
IMS_RX	Policy and charging control over RX reference point
IOP	Inter Operability
IP	Internet Protocol
IP4	Internet Protocol version 4
IPCONN	IP Connectivity
ISDM	Interworking Security Data Messages
ITD	Interoperability Test Description
IWF	Inter Working Function
JSON	Java Script Notation Object
KDF	Key Derivation Function
KMS	Key Management Server
KPI	Key Performance Indicator
LMR	Land Mobile Radio
LOC	LOCation
LTE	Long Term Evolution
MBMS	Multimedia Broadcast and Multicast Service
MBR	Maximum Bit Rate
MC	MultiCast
MCC	Mission Critical Communication
MCCP	Mission Critical MBMS subchannel Control Protocol
MCData	Mission Critical Data
MCDATA	Mission Critical Data
MCH	Multicast Channel
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 ID	MCPTT user IDentity
MCPTT	Mission Critical Push-To-Talk
MCS	Mission Critical Services
MCVideo	Mission Critical Video
MCX	Mission Critical Service
MDM	Mobile Device Management
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
MP	Media Plane

MS	Mobile Station
MSCCK	MBMS SubChannel Control Key
MSF	Mobile Storage Function
MSRP	Message Sending Relay Protocol
MTCH	MBMS point-to-multipoint Traffic Channel
MuSiK	Multicast Signalling Key
MVEA	MCVideo Emergency Alert
MVEG	MCVideo Emergency Group
MVEGC	MCVideo Emergency Group Call
MVIG	MCVideo Imminent peril Group
MVIGC	MCVideo Imminent peril Group Call
NAS	Non Access Stratum
NFC	No Floor Control
NR	New Radio
O2O	One to One
OAM	Operation And Maintenance
OMA	Open Mobile Alliance
ONN	ON Network calls
OS	Observer Scenarios
OTT	Over The Top
PCC	Policy and Charging Control
PCEF	Policy and Charging Enforcement Function
PCF	Policy Control Function
PCK	Private Call Key
PCRF	Policy and Charging Rules Function
P-CSCF	Proxy Call Session Control Function
PDU	Packed Data Unit
PES	Pre-Established Sessions
PIDF	Presence Information Data Format
PL	Packet Loss
PLMN	Public Land Mobile Network
POST	HTTP method POST
PRF	Pseudo-Random Function
PSAP	Public Safety Answering Point
PSI	Public Service Identity
PTT	Push-To-Talk
PVI	Pre-emption-Vulnerability
QCI	QoS Class Identifier
QoS	Quality of Service
RAN	Radio Access Network
REC	Railways Emergency Communications
RLS	Resource List Server
RRC	Radio Resource Control
RTCP	Real Time Control Protocol
RTP	Real-time Transport Protocol
RX	Reference Point
S2S	Server to Server
SAGE	Security Algorithms Group of Experts
SAI	Service Area Identifier
SCEF	Service Capability Exposure Function
S-CSCF	Serving Call Session Control Function
SCTP	Stream Control Transmission Protocol
SDP	Session Description Protocol
SDS	Short Data Service
SEC	SECurity
SIP	Session Initiation Protocol
SMF	Service Management Function
SP	Signalling Plane
SPK	Signalling Protection Key
SSL	Secure Socket Layer
SSRC	Synchronization SouRCe
SUT	System Under Test

TC	Transmission Control
TCCE	TETRA and Critical Communications Evolution
TCP	Transmission Control Protocol
TD	Test Description
TETRA	TErrestrial Trunked Radio
TGI	Temporal Group Identifier
TLS	Transport Layer Security
TMGI	Temporary Mobile Group Identity
TR	Technical Report
TRT	Test Reporting Tool
TS	Technical Specification
Tx	Transmission
UDB	User DataBase
UE	User Equipment
UMTS	Universal Mobile Telecommunications System
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
UTC	Coordinated Universal Time
WB	WideBand
WFC	With Floor Control
WiFi®	IEEE 802.11 family of standards
XCAP	eXtensible markup language Configuration Access Protocol
XDM	XCAP Document Management
XML	eXtended Markup Language
XSD	XML Schema Definition
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	
Identifier	A unique test description identifier should follow a well-defined naming convention, e.g. TD/AB/XX/00
Test Objective	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
Configuration(s)	• 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
References	• 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
Applicability	• 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)
Pre-test conditions	• 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

Test Sequence	Step	Type	Description
	1 2 3	*<type>*	*step description*
Notes	• optional list of explanatory notes		

- 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
- MCVideo Services
- CSC procedures (Group, Configuration, Identity and Key Management)
- Server to Server Interface
- FRMCS specific emergency communication handlings

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. eMBMS). Figure 1 illustrates the basic test infrastructure.

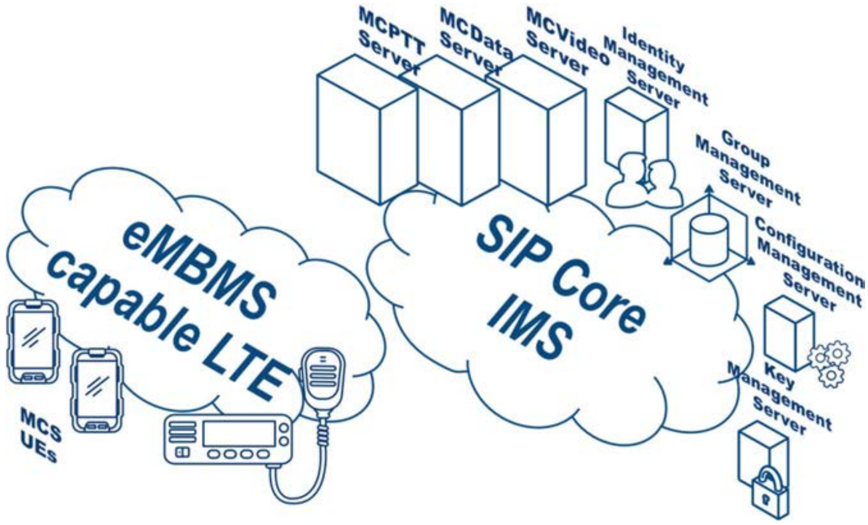

Figure 1: Typical MCS scenario to be considered in the second Plugtests

In Release 13 the 3GPP defined a comprehensive set of MCPTT Calls (see figure 2). Later in Release 14 of ETSI TS 124 379 [9] (see figure 3), further call types were defined (First-to-answer call, Ambient Listening and callbacks).

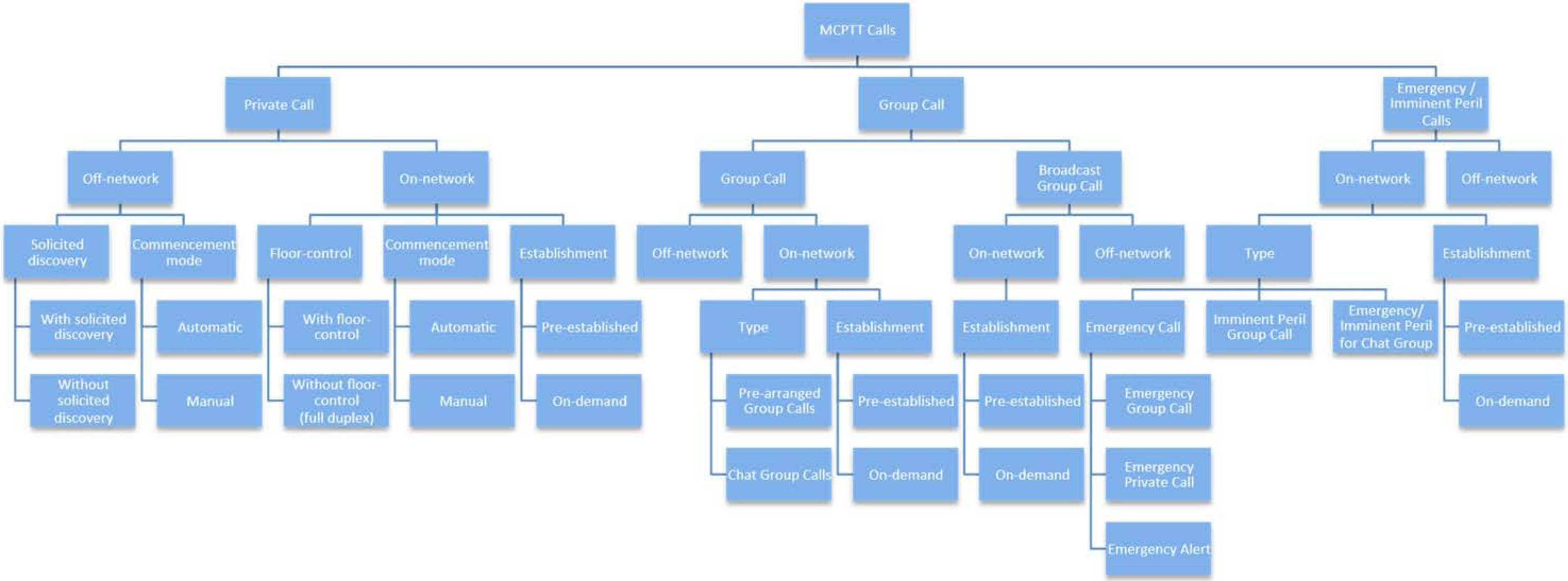

Figure 2: MCPTT call types in Release 13 of ETSI TS 124 379 [9]

Apart from "Mission Critical Voice" (MCPTT), MCData and MCVideo were defined in Release 14 (ETSI TS 124 282 [8] and ETSI TS 124 281 [7]), with their initially associated call types (see figures 4 and 5). Furthermore, MCData and MCVideo share a set of common set of features with MCPTT, such as service deployment over SIP Core/IMS, registration, affiliation, location and CSC mechanisms. Along the present document, following the evolution across the different MCX and FRMCS Plugtests, MCPTT will be used for the testing of these common features and MCData/MCVideo specific services and calls only.

Depending on the type of Plugtests (MCX, FRMCS, face to face, remote, hybrid) different configurations in clause 5 and the Test Cases in clauses 7, 8, 9 and 10 will be analysed. Definitions of each call are collected from related normative references in clause 2.1.

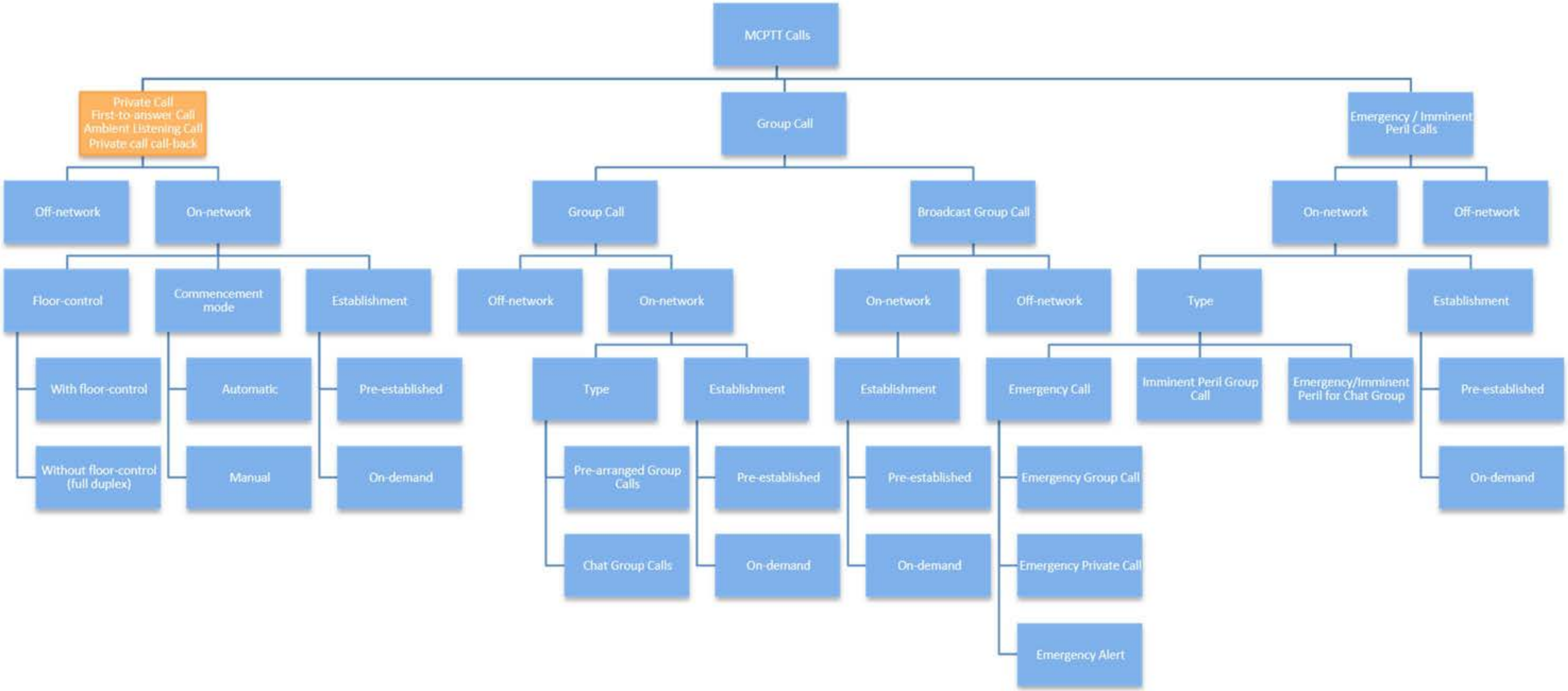

Figure 3: MCPTT call types in Release 14 of ETSI TS 124 379 [9]

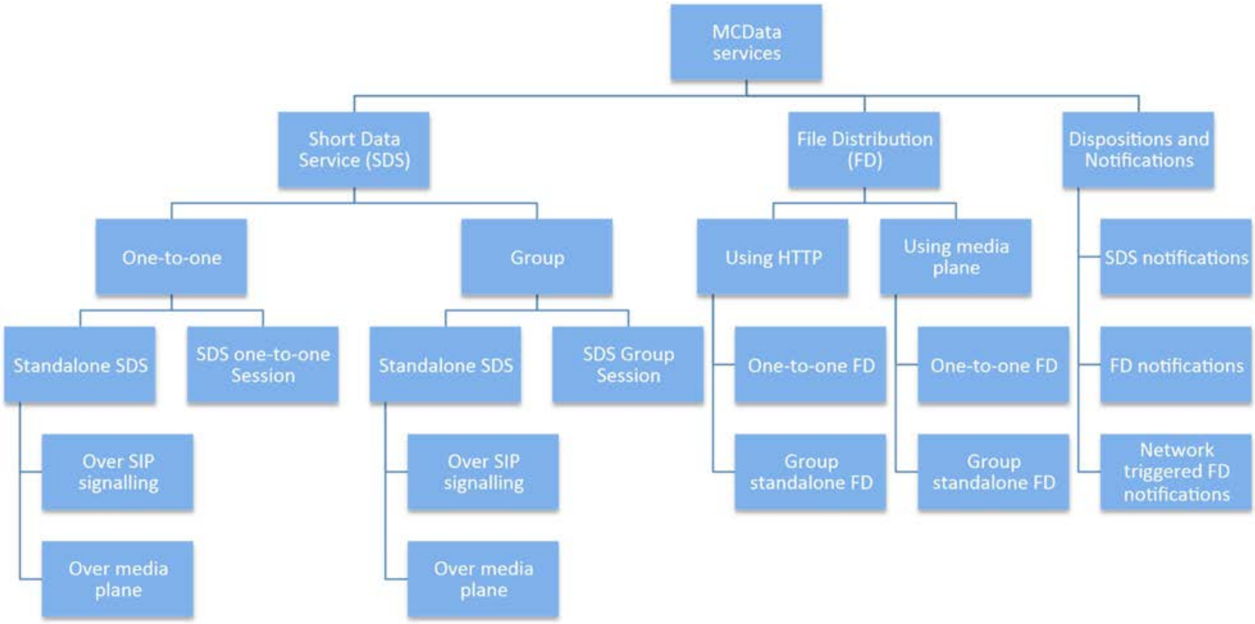

Figure 4: MCData services in Release 14 of ETSI TS 124 282 [8]

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 different Plugtests the following high level test objectives are proposed as outcomes of the testing.

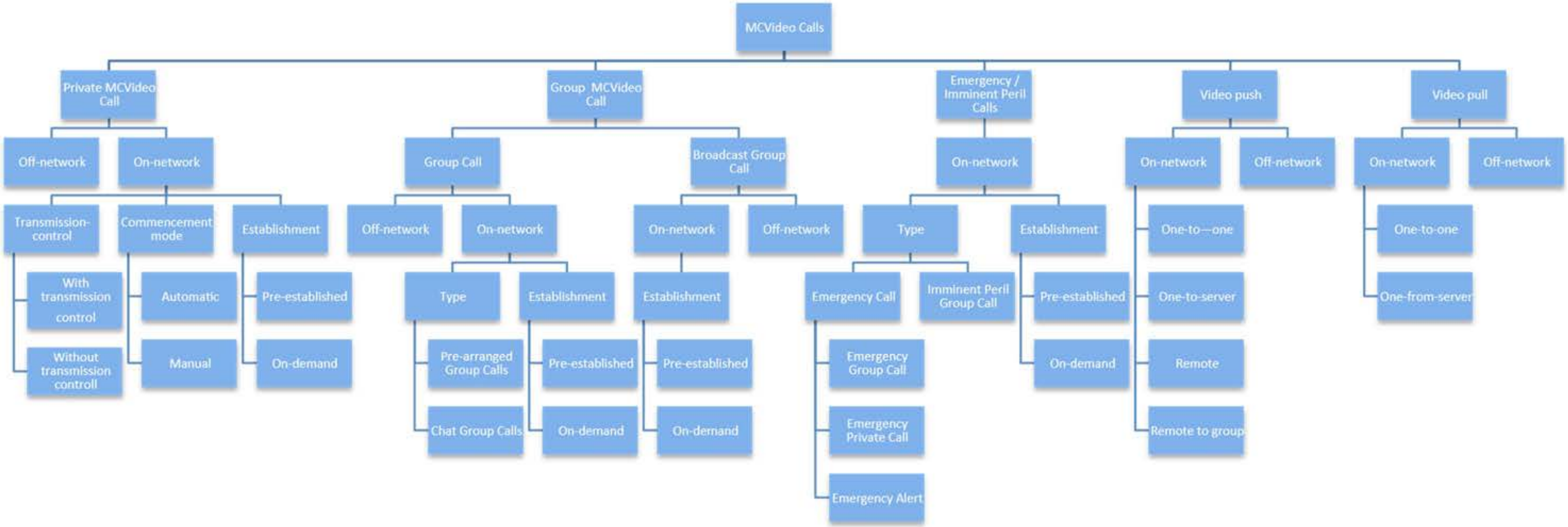

Figure 5: MCVideo call types in Release 14 of ETSI TS 124 281 [7]

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 (S2S) communications:** The interfaces between controlling and non-controlling functions in different configurations will be considered.

- **Functional Alias (FA):** Activation, determination, change and different Functional Alias related operations will be considered.

- **Interoperability (IOP) Scenarios:** Complex heterogeneous interactions comprising different individual test cases.

- **Regroup using a preconfigured group (RegrPrec):** User and group regrouping mechanisms using a preconfigure group will be analysed.

- **MCData Message Store (MCDATAMS):** Message Store for MCData and related notification mechanisms will be considered.

- **eMBMS complementary test cases (EMBMS-ADDITIONAL):** eMBMS specific complex and additional test cases.

- **Observer Scenarios (OS):** Test cases defined upon observers' feedbck regarding the need to show an operation as realistic as possible.

- **Future Railway Mobile Communication System (FRMCS) scenarios:** FRMCS specific test cases, considering particularly Railway Emergency Communications (REC) handling.

- **Interworking Function (IWF):** Affiliation, MCPTT private and group calling and secure messaging in different IWF modes.
- **Inter MCX (IMCX):** Signalling and media exchange between two MCX systems in different trust modes.
- **Off-network (OFF-NW):** Off-network operation.

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

- **Connectivity (CONN) (132 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 and 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 MCData 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.
- CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/10 (clause 7.2.97):
  - Participating checks the status of the functional alias during the setup an on-demand prearranged MCPTT Group Call.
- CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/06 (clause 7.2.98):
  - Participating checks the status of the functional alias during the setup of an on-demand Chat Group Call.
- CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/03 (clause 7.2.99):
  - Participating checks the status of the functional alias during the setup of on-demand private MCPTT call in automatic commencement model with floor control.
- CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/02 (clause 7.2.100):
  - Participating checks the status of the functional alias during the setup of an on-demand first-to-answer MCPTT call with floor control.
- CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/02 (clause 7.2.101):
  - MCPTT User includes the FA in an on-demand first-to-answer MCPTT call with floor control using pre-established sessions.

- CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/04 (clause 7.2.102):
  - MCPTT User includes the FA in an on-demand private MCPTT call in automatic commencement model with floor control.
- CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/03 (clause 7.2.103):
  - MCPTT User calls a FA using an on-demand first-to-answer MCPTT call with floor control.
- CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WOFC/02 (clause 7.2.104):
  - MCPTT User calls a FA using an on-demand first-to-answer MCPTT call without floor control.
- CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/03 (clause 7.2.105):
  - MCPTT User calls a FA using an on-demand first-to-answer MCPTT call with floor control using pre-established sessions.
- CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WOFC/02 (clause 7.2.106):
  - MCPTT User calls a FA using a pre-established first-to-answer MCPTT call in manual commencement mode without floor control.
- CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/05 (clause 7.2.107):
  - A not-authorized MCPTT User initiates an on-demand private MCPTT call in automatic commencement model with floor control.
- CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WFC/NFC/02 (clause 7.2.108):
  - A not-authorized MCPTT User initiates an on-demand private MCPTT call in manual commencement mode with floor control.
- CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/02 (clause 7.2.109):
  - A not-authorized MCPTT User initiates a pre-established private MCPTT call in automatic commencement mode with floor control.
- CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WFC/NFC/02 (clause 7.2.110):
  - A not-authorized MCPTT User initiates a pre-established private MCPTT call in manual commencement mode with floor control.
- CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WOFC/02 (clause 7.2.111):
  - A not-authorized MCPTT User initiates an on-demand private MCPTT call in automatic commencement mode without floor control.
- CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WOFC/02 (clause 7.2.112):
  - A not-authorized MCPTT User initiates an on-demand private MCPTT call in manual commencement mode without floor control.
- CONN-MCPTT/ONN/PRIV/AUTO/PRE/WOFC/02 (clause 7.2.113):
  - A not-authorized MCPTT User initiates a pre-established private MCPTT call in automatic commencement mode without floor control.
- CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WOFC/02 (clause 7.2.114):
  - A not-authorized MCPTT User initiates a pre-established private MCPTT call in manual commencement mode without floor control.
- CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/06 (clause 7.2.115):
  - A not-authorized MCPTT User initiates an on-demand private MCPTT emergency call in automatic commencement model with floor control.

- CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/11 (clause 7.2.116):
  - Handling of non acknowledged user information during an on-demand prearranged MCPTT Group Call.
- CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/12 (clause 7.2.117):
  - Handling of TNG1 timer during the setup of an on-demand prearranged MCPTT Group Call.
- CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/05 (clause 7.2.118):
  - Handling of non acknowledged user information during a prearranged MCPTT Group Call using pre-established session.
- CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/06 (clause 7.2.119):
  - Handling of TNG1 timer during the setup of a prearranged MCPTT Group Call using pre-established session.
- CONN-MCDATA/ONN/IPCONN/01 (clause 7.2.120):
  - MCData client establishes a IP Connectivity session with another MCData client.
- CONN-MCDATA/ONN/IPCONN/02 (clause 7.2.121):
  - MCData client establishes a IP Connectivity session with another MCData client by using the target IP Information.
- CONN-MCDATA/ONN/EMERG-ALERT/MSG/01 (clause 7.2.122):
  - MCData User initiates an emergency alert by sending a SIP MESSAGE.
- CONN-MCDATA/ONN/EMERG-ALERT/MSG/02 (clause 7.2.123):
  - MCData User cancels an emergency alert by sending a SIP MESSAGE.
- CONN-MCDATA/ONN/EMERG-ALERT/MSG/03 (clause 7.2.124):
  - MCData User cancels an emergency alert originated by other user by sending a SIP MESSAGE.
- CONN-MCVIDEO/ONN/REMOTE/PRIV/01 (clause 7.2.125):
  - MCPTT user to send a remotely initiated private call request to the remote MCPTT user.
- CONN-MCVIDEO/ONN/TRANSF/PRIV/01 (clause 7.2.126):
  - MCPTT user requests to transfer an ongoing MCPTT private call to a target MCPTT user.
- CONN-MCVIDEO/ONN/FORW/PRIV/01 (clause 7.2.127):
  - MCPTT user decides to forward an incoming MCPTT private call to a new target MCPTT ID.
- CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/07 (clause 7.2.128):
  - MCPTT User initiates a prearranged MCPTT Group Call using pre-established session: Emergency Group Call.
- CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/08 (clause 7.2.129):
  - MCPTT User initiates a prearranged MCPTT Group Call using pre-established session: Upgrade to in progress emergency or imminent peril.
- CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/09 (clause 7.2.130):
  - MCPTT User cancels the emergency condition of a prearranged MCPTT Group Call using pre-established session.

- CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/03 (clause 7.2.131):
    - MCPTT User initiates a pre-established private MCPTT emergency call in automatic commencement mode with floor control.
- CONN-MCPTT/ONN/GROUP/PREA/ONDEM/SUBCONF/01 (clause 7.2.132):
    - Subscription to Conference Event Package for pre-arranged group calls.

- **Floor Controlling (FC) (9 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.
    - FC/LOC/BASIC/01 (clause 7.3.8):
        - Sharing location information during FC operations.
    - FC/MT/LOC/BASIC/01 (clause 7.3.9):
        - Sharing location information during multi-talker FC operations.

- **Registration & Authorization (REGAUTH) (5 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 3rd 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]).
    - REGAUTH/3PRTYREG/REGISTER/02 (clause 7.4.4):
        - MCPTT service server limits the number of simultaneous successful service authorizations while using third-party registration.

- REGAUTH/PUBLISH/REGISTER/02 (clause 7.4.5):
    - MCPTT service server limits the number of simultaneous successful service authorizations while using PUBLISH mechanism.

- **Policing (PCC) (18 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]).
    - PCC/5GSQOSFLOWSETUP/Rx/01 (clause 7.5.7):
        - Setup of a Unicast 5GS QoS Flow by SIP Core/IMS using Rx.
    - PCC/5GSQOSFLOWSETUP/Rx/02 (clause 7.5.8):
        - Setup of a Unicast 5GS QoS Flow by MCPTT Participant AS using Rx.
    - PCC/5GSQOSFLOWSETUP/N5/01 (clause 7.5.9):
        - Setup of a Unicast 5GS QoS Flow by SIP Core/IMS using N5.
    - PCC/5GSQOSFLOWSETUP/N5/02 (clause 7.5.10):
        - Setup of a Unicast 5GS QoS Flow by MCPTT Participant AS using N5.
    - PCC/5GSQOSFLOWSETUP/N33/01 (clause 7.5.11):
        - Setup of a Unicast 5GS QoS Flow by SIP Core/IMS using N33.
    - PCC/5GSQOSFLOWSETUP/N33/02 (clause 7.5.12):
        - Setup of a Unicast 5GS QoS Flow by MCPTT Participant AS using N5.
    - PCC/5GSQOSFLOWUPDATE/Rx/01 (clause 7.5.13):
        - Update of a Unicast 5GS QoS Flow by SIP Core/IMS using Rx.
    - PCC/5GSQOSFLOWUPDATE/Rx/02 (clause 7.5.14):
        - Update of a Unicast 5GS QoS Flow by MCPTT Participant AS using Rx.

- PCC/5GSQOSFLOWUPDATE/N5/01 (clause 7.5.15):
  - Update of a Unicast 5GS QoS Flow by SIP Core/IMS using N5.
- PCC/5GSQOSFLOWUPDATE/N5/02 (clause 7.5.16):
  - Update of a Unicast 5GS QoS Flow by MCPTT Participant AS using N5.
- PCC/5GSQOSFLOWUPDATE/N33/01 (clause 7.5.17):
  - Update of a Unicast 5GS QoS Flow by SIP Core/IMS using N33.
- PCC/5GSQOSFLOWUPDATE/N33/02 (clause 7.5.18):
  - Update of a Unicast 5GS QoS Flow by MCPTT Participant AS using N5.

• **EMBMS (20 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.
  - EMBMS/NOTLISTENING/01 (clause 7.6.10):
    - Handling of a not-listening report sent by MCPTT Client.
  - EMBMS/SUSPENSION/01 (clause 7.6.11):
    - Handling of a suspension-sstatus report sent by MCPTT Client.
  - EMBMS-MCVIDEO/ACTIVATEBEARER/WPRETMGI/01 (clause 7.6.12):
    - Use of dynamically established MBMS bearers in prearranged MCVideo group calls with pre-allocated TMGIs.

- EMBMS-MCVIDEO/ACTIVATEBEARER/WOPRETMGI/01 (clause 7.6.13):
    - Use of dynamically established MBMS bearers in prearranged MCvideo group calls without pre-allocated TMGIs.
- EMBMS-MCVIDEO/PREBEARER/WPRETMGI/01 (clause 7.6.14):
    - Use of pre-established MBMS bearers in prearranged MCVideo group calls with pre-allocated TMGIs.
- EMBMS-MCVIDEO/PREBEARER/WOPRETMGI/01 (clause 7.6.15):
    - Use of pre-established MBMS bearers in prearranged MCVideo group calls without pre-allocated TMGIs.
- EMBMS-MCVIDEO/MODIFYBEARER/01 (clause 7.6.16):
    - Modification of MBMS bearers upon reception of emergency upgrade request in an MCVideo group call.
- EMBMS-MCVIDEO/DEACTBEARER/WTMGIDEA/01 (clause 7.6.17):
    - Deactivation of MBMS bearers after termination of a prearranged MCVideo group call with TMGI deallocation.
- EMBMS-MCVIDEO/DEACTBEARER/WOTMGIDEA/01 (clause 7.6.18):
    - Deactivation of MBMS bearers after termination of a prearranged MCVideo group call without TMGI deallocation.
- EMBMS-MCVIDEO/SWITCHTOUNITMGIEXP/01 (clause 7.6.19):
    - Switching to unicast bearer after TMGI expiration in a MCVideo call.
- EMBMS-MCVIDEO/NOTLISTENING/01 (clause 7.6.20):
    - Handling of a not-listening report sent by MCVideo Client.
- EMBMS-MCVIDEO/SUSPENSION/01 (clause 7.6.21):
    - Handling of a suspension-sstatus report sent by MCVideo Client.

• **Affiliations (AFFIL) (9 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]).

- AFFIL/CHANGE/04 (clause 7.7.6):
    - Affiliation change triggered by a functional-alias activation criteria.
- AFFIL/CHANGE/05 (clause 7.7.7):
    - Affiliation change triggered by a functional-alias deactivation criteria.
- AFFIL/CHANGE/06 (clause 7.7.8):
    - Affiliation change triggered by implicit affiliation in an on demand pre-arranged group call.
- AFFIL/CHANGE/07 (clause 7.7.9):
    - Affiliation change triggered by implicit affiliation during service authorization.

- **Location (LOC) (3 test cases):**
    - LOC/3PRTYREG/CONFIG/01 (clause 7.8.1):
        - MCPTT Client Configuration upon 3rd 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) (11 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.

- CSC/RAN/APN/01 (clause 7.9.9):
    - Successful configuration of MC 4G APN.
- CSC/RAN/DNN/01 (clause 7.9.10):
    - Successful configuration of MC 5G DNN.
- CSC/RAN/5GSLICE/01 (clause 7.9.11):
    - Successful configuration of MC 5G slice.

- **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/XMLENCRYPT/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) (10 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.
- FA/RESOL/01 (clause 7.13.9):
    - MCPTT server requests a resolution of the Functional alias from the MCPTT server owning that FA.
- FA/CHANGE/05 (clause 7.13.10):
    - Automatic deactivation of FA.

- **Interoperability Testiing (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.

- **Regroup using a preconfigured group (4 test cases):**
    - REGRPREC/USERREG/01 (clause 7.15.1):
        - MCPTT user requests a users regroup using a preconfigured group.
    - REGRPREC/USERREG/02 (clause 7.15.2):
        - MCPTT user removes a users regroup using a preconfigured group.
    - REGRPREC/GROUPREG/01 (clause 7.15.3):
        - MCPTT user requests a group regroup using a preconfigured group.
    - REGRPREC/GROUPREG/02 (clause 7.15.4):
        - MCPTT user removes a group regroup using a preconfigured group.

- **MCData Message Store (MCDATAMS) (22 test cases):**
    - MCDATAMS/RETR/01 (clause 7.16.1):
        - MCData message store client retrieves an object.
    - MCDATAMS/SEARCH/01 (clause 7.16.2):
        - MCData message store client searches for information about a selected set of objects.
    - MCDATAMS/UPDATE/01 (clause 7.16.3):
        - MCData message store client updates an existing object.
    - MCDATAMS/DEL/01 (clause 7.16.4):
        - MCData message store client deletes an object.
    - MCDATAMS/DEP/01 (clause 7.16.5):
        - MDData server deposits an object of an MCData user.
    - MCDATAMS/COPY/01 (clause 7.16.6):
        - MCData message store client copies object(s) and/or folder(s) to a destination folder.
    - MCDATAMS/DEL/02 (clause 7.16.7):
        - MCData message store client deletes a folder.
    - MCDATAMS/CRE/01 (clause 7.16.8):
        - MCData message store client creates a folder.
    - MCDATAMS/MOVE/01 (clause 7.16.9):
        - MCData message store client moves an object to a destination folder.
    - MCDATAMS/SEARCH/02 (clause 7.16.10):
        - MCData message store client searches for information about a selected set of folders.
    - MCDATAMS/SUBS/01 (clause 7.16.11):
        - MCData message store client subscribes to changes in the store.
    - MCDATAMS/SUBS/02 (clause 7.16.12):
        - MCData message store client cancels the subscription to changes in the store.
    - MCDATAMS/SUBS/03 (clause 7.16.13):
        - MCData message store client updates a subscription to changes in the store.
    - MCDATAMS/UP/01 (clause 7.16.14):
        - MCData message store client uploads an object.
    - MCDATAMS/SYNC/01 (clause 7.16.15):
        - MCData message store function sends a notification of changes.
    - MCDATAMS/SYNC/02 (clause 7.16.16):
        - MCData message store client searches for changes.
    - MCDATAMS/LIST/01 (clause 7.16.17):
        - MCData message store client lists subfolders of a folder.

- MCDATAMS/NOTCH/01 (clause 7.16.18):
    - Message notification client in the MCData Client creates a notification channel.
- MCDATAMS/NOTCH/02 (clause 7.16.19):
    - Message notification client in the MCData Client deletes a notification channel.
- MCDATAMS/NOTCH/03 (clause 7.16.20):
    - Message notification client in the MCData Client updates a notification channel.
- MCDATAMS/NOTCH/04 (clause 7.16.21):
    - Message notification client in the MCData Client opens a notification channel.
- MCDATAMS/SYNC/03 (clause 7.16.22):
    - MCData message store function sends a notification of changes using notification channel.

- **eMBMS complementary test cases (EMBMS_ADDITIONAL) (19 test cases):**
    - EMBMS_ADDITIONAL/MB2C/FUNCT/ALLOCTMGI/01 (clause 8.2.1):
        - TMGI allocation management.
    - EMBMS_ADDITIONAL/MB2C/FUNCT/DEALLOCTMGI/01 (clause 8.2.2):
        - TMGI deallocation management.
    - EMBMS_ADDITIONAL/MB2C/FUNCT/ACTIVATEBEARER/01 (clause 8.2.3):
        - Successful bearer activation.
    - EMBMS_ADDITIONAL/MB2c/FUNCT/DEACTBEARER/01 (clause 8.2.4):
        - Successful bearer deactivation.
    - EMBMS_ADDITIONAL/MB2C/FUNCT/MODBEARER/01 (clause 8.2.5):
        - Successful bearer modification.
    - EMBMS_ADDITIONAL/MB2C/FUNCT/TMGIEXP/01 (clause 8.2.6):
        - Management of TMGI expiration.
    - EMBMS_ADDITIONAL/MB2C/FUNCT/AGGREQUEST/01 (clause 8.2.7):
        - Management of aggregated requests.
    - EMBMS_ADDITIONAL/MB2C/PRIO/PREEM/01 (clause 8.2.8):
        - Management of Bearer Pre-emption.
    - EMBMS_ADDITIONAL/MB2C/PRIO/RESUM/01 (clause 8.2.9):
        - Management of Bearer Resumption.
    - EMBMS_ADDITIONAL/MB2C/SECURITY/TLS/01 (clause 8.2.10):
        - MB2-C security using TLS over TCP.
    - EMBMS_ADDITIONAL/MB2C/SECURITY/DTLS/01 (clause 8.2.11):
        - MB2-C security using DTLS over SCTP.
    - EMBMS_ADDITIONAL/MB2C/ROBUSTNESS/RESTORATION/01 (clause 8.2.12):
        - Restoration procedure management.

- EMBMS-ADDITIONAL/MB2C/ROBUSTNESS/ALLOCATE/TMGI/01 (clause 8.2.13):
  - TMGI allocation failure.
- EMBMS-ADDITIONAL/MB2C/ROBUSTNESS/DEALLOCATE/TMGI/01 (clause 8.2.14):
  - TMGI deallocation failure.
- EMBMS-ADDITIONAL/MB2c/ROBUSTNESS/ACTIVATE/BEARER/01 (clause 8.2.15):
  - Bearer activation failure.
- EMBMSÐADDITIONAL/MB2C/ROBUSTNESS/DEACTIVATE/BEARER/01 (clause 8.2.16):
  - Bearer deactivation failure.
- EMBMS-ADDITIONAL/MB2C/ROBUSTNESS/MODIFY/BEARE/01 (clause 8.2.17):
  - Bearer modification failure.
- EMBMS_ADDITIONAL/MB2C/LOAD/MULTIPLEGCS/01 (clause 8.2.18):
  - Multiple GCS-AS management.
- EMBMS_ADDITIONAL/MB2C/LOAD/100BEARER/01 (clause 8.2.19):
  - Activation of multiple (100) bearers.

- **Observer Scenarios (OS) 12 test cases):**
  - OS1 (clause 9.3):
    - Emergency call.
  - OS2 (clause 9.4):
    - Emergency call handling.
  - OS3 (clause 9.5):
    - Encrypted private call.
  - OS4.1 (clause 9.6):
    - eMBMS MCPTT.
  - OS4.2 (clause 9.7):
    - eMBMS MCVideo.
  - OS5 (clause 9.8):
    - Switching on.
  - OS6 (clause 9.9):
    - Encrypted MCPTT group call.
  - OS7.1 (clause 9.10):
    - Enhanced Status.
  - OS7.2 (clause 9.11):
    - MCDATA SDS.
  - OS8 (clause 9.12):
    - Encrypted MCVideo Group Call.

- OS9 (clause 9.13):
  - Parallel MCPTT and MCVideo.
- OS8 (clause 9.14):
  - Initiation of the Railways emergency alert.

- **FRMCS Scenarios (FRMCS) (12 test cases):**
  - FRMCS/REC/CLIENT/01 (clause 10.1):
    - Initiation by a mobile user of a railways emergency communication, client driven, alert and call.
  - FRMCS/REC/CLIENT/02 (clause 10.2):
    - Initiation by a mobile user of a railways emergency communication, client driven, combined alert and call.
  - FRMCS/REC/SERVER/01 (clause 10.3):
    - Initiation by a mobile user of a railways emergency communication, server driven, alert and call.
  - FRMCS/REC/SERVER/02 (clause 10.4):
    - Initiation by a mobile user of a railways emergency communication, server driven, combined alert and call.
  - FRMCS/IOP/ADVFA/01 clause (10.5):
    - Dynamic MCS-native vs FRMCS triggered FAs management.
  - FRMCS/IOP/MULTI/01 clause (10.6):
    - Multi-train voice communication for train drivers.
  - FRMCS/IOP/VIDEO/01 clause (10.7):
    - Accessing video footage.
  - FRMCS/IOP/FILE/01 clause (10.8):
    - Upload of files.
  - FRMCS/IOP/IPCONN/01 clause (10.9):
    - IPconndual connectivity.
  - FRMCS/IOP/IPCONN/02 clause (10.10):
    - IPconnresiliency/termination upon connectivity loss.
  - FRMCS/IOP/REC/01 clause (10.11):
    - REC call arbitration pre-emption.
  - FRMCS/IOP/MMCS/01 clause (10.12):
    - Multiservice MCPTT/MCData.

- **Interworking Function (IWF) (33 test cases):**
  - IWF/MCPTT/AFFIL/DET/01 clause (11.2.1):
    - Affiliation status determination from MCPTT server owning the MCPTT group(s).
  - IWF/MCPTT/AFFIL/CHANGE/01 clause (11.2.2):
    - Sending affiliation status change towards MCPTT server owning MCPTT group procedure.

- IWF/MCPTT/AFFIL/DET/02 clause (11.2.3):
    - Receiving subscription to affiliation status of users by the IWF in terminating participating role.
- IWF/MCPTT/AFFIL/CHANGE/02 clause (11.2.4):
    - Sending notification of affiliation changes of users by the IWF in terminating participating role.
- IWF/MCPTT/AFFIL/IWFOWNED/***/01 clause (11.2.5):
    - Remarks regarding procedures of IWF owning the MCPTT group.
- IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/01 clause (11.3.1):
    - IWF in participating role originates an on-demand prearranged MCPTT group call on behalf of an LMR user.
- IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/01 clause (11.3.2):
    - IWF in participating role initiates an on-demand chat MCPTT group call on behalf of an LMR user.
- IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/02 clause (11.3.3):
    - IWF in participating role joins an ongoing on-demand chat MCPTT group call on behalf of an LMR user.
- IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/02 clause (11.3.4):
    - IWF performing the terminating participating procedures receives an on-demand prearranged MCPTT group call targeting a user homed in the IWF.
- IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/03 clause (11.3.5):
    - IWF performing the terminating participating procedures receives an INVITE associated to a chat MCPTT group call targeting a user homed in the IWF.
- IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/04 clause (11.3.6):
    - IWF performing the terminating participating procedures receives a reINVITE associated to a chat MCPTT group call targeting a user homed in the IWF.
- IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WFC/NFC/01 clause (11.3.7):
    - IWF in participating role originates an on demand MCPTT private call in manual commencement mode with floor control on behalf of an LMR user.
- IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WFC/NFC/01 clause (11.3.8):
    - IWF in participating role originates an on demand MCPTT private call in automatic commencement mode with floor control on behalf of an LMR user.
- IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WFC/NFC/02 clause (11.3.9):
    - IWF performing the terminating participating procedures receives an on demand MCPTT private call in manual commencement mode with floor control on behalf of an LMR user.
- IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WFC/NFC/02 clause (11.3.10):
    - IWF performing the terminating participating procedures receives an on demand MCPTT private call in automatic commencement mode with floor control on behalf of an LMR user.
- IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WOFC/NFC/01 clause (11.3.11):
    - IWF in participating role originates an on demand MCPTT private call in manual commencement mode without floor control on behalf of an LMR user.

- IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WOFC/NFC/01 clause (11.3.12):
  - IWF in participating role originates an on demand MCPTT private call in automatic commencement mode without floor control on behalf of an LMR user.
- IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WOFC/NFC/02 clause (11.3.13):
  - IWF performing the terminating participating procedures receives an on demand MCPTT private call in manual commencement mode without floor control on behalf of an LMR user.
- IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WOFC/NFC/02 clause (11.3.14):
  - IWF performing the terminating participating procedures receives an on demand MCPTT private call in automatic commencement mode without floor control on behalf of an LMR user.
- IWF/MCPTT/CONN/ONN/CTRL/GROUP/PREA/ONDEM/NFC/01 clause (11.3.15):
  - IWF in controlling role invites an MCPTT user to an on-demand prearranged MCPTT group call initiated by an LMR user.
- IWF/MCPTT/CONN/ONN/CTRL/GROUP/PREA/ONDEM/NFC/02 clause (11.3.16):
  - IWF in controlling role receives the request to establish an on-demand prearranged MCPTT group call initiated by an MCPTT user.
- IWF/MCPTT/CONN/ONN/CTRL/GROUP/CHAT/ONDEM/NFC/01 clause (11.3.17):
  - IWF in controlling role receives the request to establish an MCPTT chat session.
- IWF/MCPTT/CONN/ONN/CTRL/GROUP/CHAT/ONDEM/NFC/02 clause (11.3.18):
  - IWF in controlling role receives the request to join an MCPTT chat session.
- IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WFC/NFC/01 clause (11.3.19):
  - IWF in controlling role originates an on demand MCPTT private call in automatic commencement mode with floor control on behalf of an LMR user.
- IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WFC/NFC/01 clause (11.3.20):
  - IWF in controlling role originates an on demand MCPTT private call in manual commencement mode with floor control on behalf of an LMR user.
- IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WOFC/NFC/01 clause (11.3.21):
  - IWF in controlling role originates an on demand MCPTT private call in automatic commencement mode without floor control on behalf of an LMR user.
- IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WOFC/NFC/01 clause (11.3.22):
  - IWF in controlling role originates an on demand MCPTT private call in manual commencement mode without floor control on behalf of an LMR user.
- IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WFC/NFC/02 clause (11.3.23):
  - IWF in controlling role receives the request to establish an on demand MCPTT private call in automatic commencement mode with floor control targeting a user homed in the IWF.
- IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WFC/NFC/02 clause (11.3.24):
  - IWF in controlling role receives the request to establish an on demand MCPTT private call in manual commencement mode with floor control targeting a user homed in the IWF.
- IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WOFC/NFC/02 clause (11.3.25):
  - IWF in controlling role receives the request to establish an on demand MCPTT private call in automatic commencement mode without floor control targeting a user homed in the IWF.

  - IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WOFC/NFC/02 clause (11.3.26):
    - IWF in controlling role receives the request to establish an on demand MCPTT private call in manual commencement mode without floor control targeting a user homed in the IWF.
  - IWF/IDSM/01 clause (11.4.1):
    - IWF originates Interworking Security Data message.
  - IWF/IDSM/02 clause (11.4.2):
    - IWF receivess Interworking Security Data message.

- **Inter MCX (IMCX) (10 test cases):**
  - IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/CTRL/TRUSTED/NFC/01 clause (12.2.2):
    - MCPTT User in an MCS system owning the temporary group initiates an on-demand prearranged MCPTT Group Call in trusted mode.
  - IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/CTRL/UNTRUSTED/NFC/01 clause (12.2.3):
    - MCPTT User in an MCS system owning the temporary group initiates an on-demand prearranged MCPTT Group Call in untrusted mode.
  - IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/NONCTRL/NFC/01 clause (12.2.4):
    - MCPTT User in an MCS system owning a constituent group initiates an on-demand prearranged MCPTT Group Call.
  - IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/CTRL/NFC/01 clause (12.2.5):
    - MCPTT User in an MCS system owning the temporary group initiates an on-demand chat MCPTT Group Call.
  - IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/NONCTRL/NFC/01 clause (12.2.6):
    - MCPTT User in an MCS system owning a constituent group initiates an on-demand chat MCPTT Group Call.
  - IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/CTRL/TRUSTED/NFC/01 clause (12.3.2):
    - MCVideo User in an MCS system owning the temporary group initiates an on-demand prearranged MCVideo Group Call in trusted mode.
  - IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/CTRL/UNTRUSTED/NFC/01 clause (12.3.3):
    - MCVideo User in an MCS system owning the temporary group initiates an on-demand prearranged MCVideo Group Call in untrusted mode.
  - IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/NONCTRL/NFC/01 clause (12.3.4):
    - MCVideo User in an MCS system owning a constituent group initiates an on-demand prearranged MCVideo Group Call.
  - IMCX/CONN/MCVIDEO/ONN/GROUP/CHAT/ONDEM/CTRL/NFC/01 clause (12.3.5):
    - MCVideo User in an MCS system owning the temporary group initiates an on-demand chat MCVideo Group Call.
  - IMCX/CONN/MCVIDEO/ONN/GROUP/CHAT/ONDEM/NONCTRL/NFC/01 clause (12.3.6):
    - MCVideo User in an MCS system owning a constituent group initiates an on-demand chat MCVideo Group Call.

- **Off-Network (OFF-NW) (8 test cases):**
  - CONN-MCPTT/OFF/GROUP/01 clause (13.2.1):
    - Initiation of an off-network group call with confirm indication when there is no ongoing group call.
  - CONN-MCPTT/OFF/GROUP/02 clause (13.2.2):
    - Initiation of an off-network group call without confirm indication when there is no ongoing group call.
  - CONN-MCPTT/OFF/GROUP/03 clause (13.2.3):
    - Passive join to an ongoing group call.
  - CONN-MCPTT/OFF/GROUP/04 clause (13.2.4):
    - Initiation of an off-network group call when there is an ongoing group call.
  - CONN-MCPTT/OFF/GROUP/05 clause (13.2.5):
    - Leaving an on-going off-network group call.
  - CONN-MCPTT/OFF/GROUP/06 clause (13.2.6):
    - Merge of two off-network group calls.
  - CONN-MCPTT/OFF/PRIV/01 clause (13.2.7):
    - Initiation of an off-network private call in manual commencement mode.
  - CONN-MCPTT/OFF/PRIV/02 clause (13.2.8):
    - Initiation of an off-network private call in automatic commencement mode.

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 for MCPTT in clause 5.3.2 of ETSI TS 124 379 [9]. Note that equivalent models would apply for MCData and MCVideo. 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.

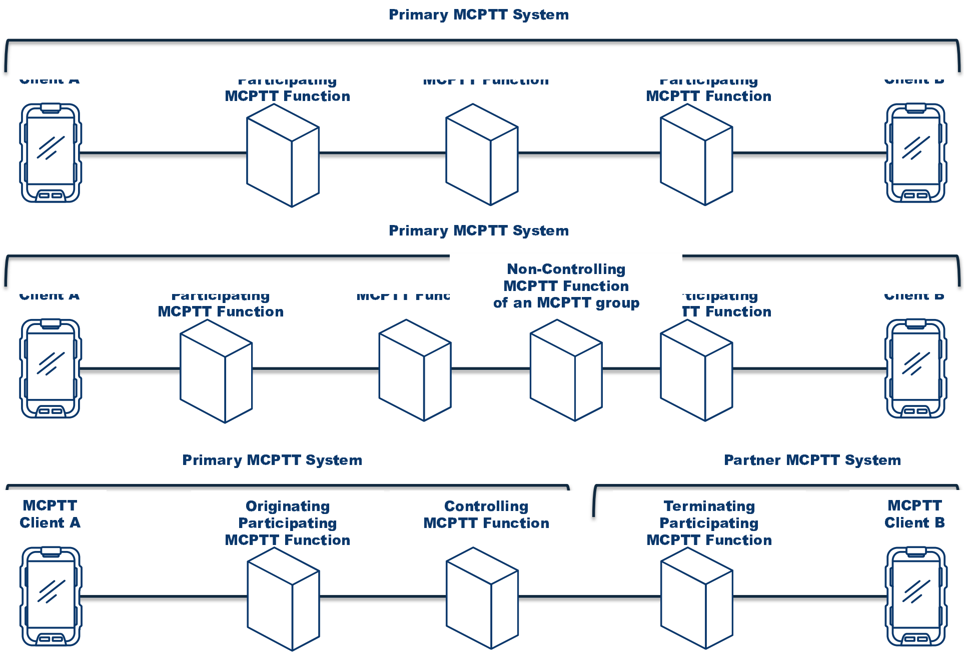

Figure 6: Functional connectivity modes (figures 5.3.2.1 to 5.3.2.3 of ETSI TS 124 379 [9])

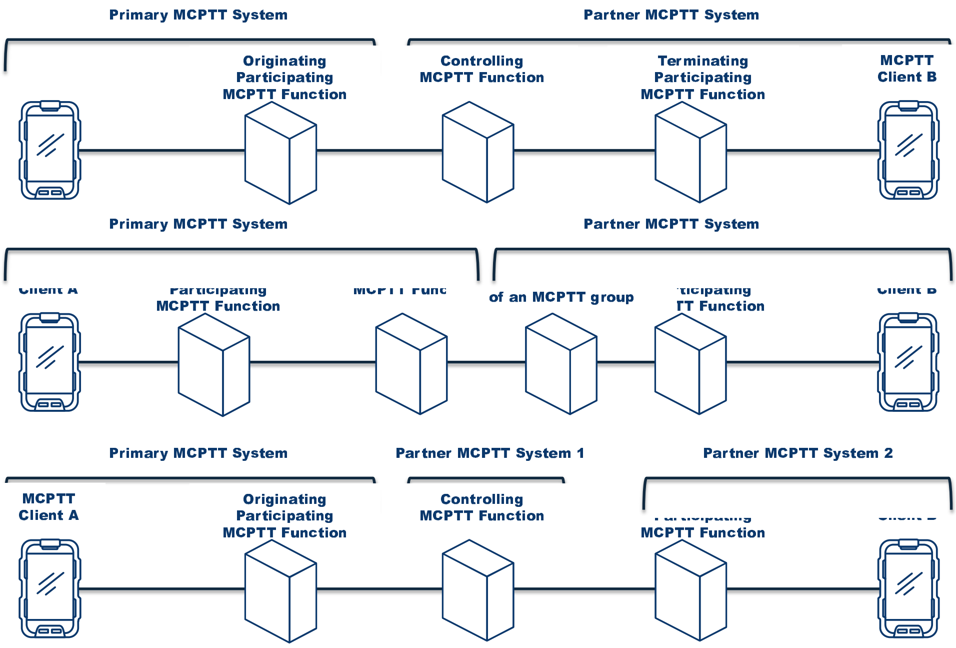

Figure 7: Functional connectivity modes (figures 5.3.2.4 to 5.3.2.6 of ETSI TS 124 379 [9])

5.2 CFG_ONN_OTT-1

CFG_ONN_OTT-1 is shown in figure 8 (MCPTT shown but equivalent configuration would apply for MCData and MCVideo).

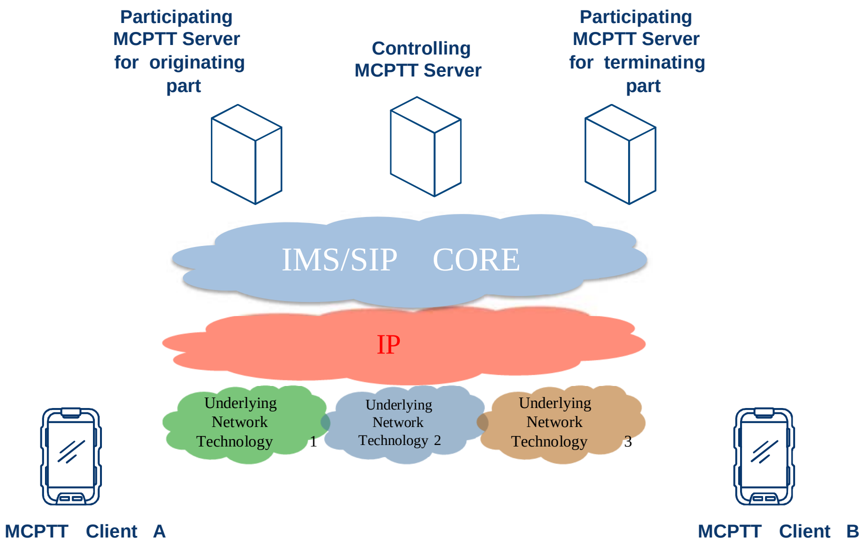

Figure 8: CFG_ONN_OTT-1 Scheme

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. (MCPTT shown but equivalent configuration would apply for MCData and MCVideo with the associated reference points, same applies for figure 10.)

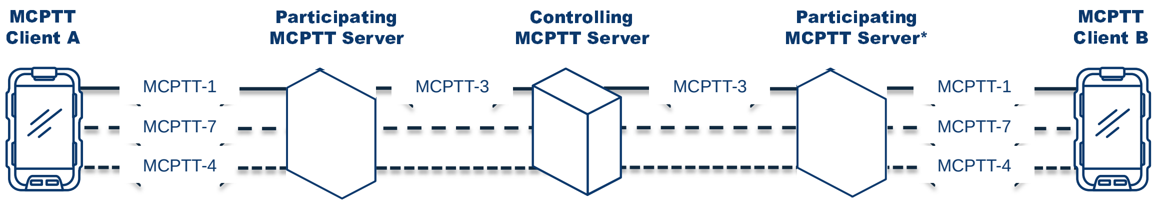

Figure 9: CFG_ONN_OTT-1 Interfaces for the unicast case

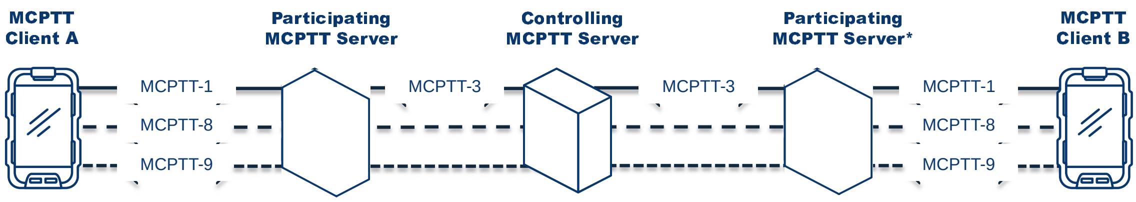

Figure 10: CFG_ONN_OTT-1 Interfaces for the multicast case

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).

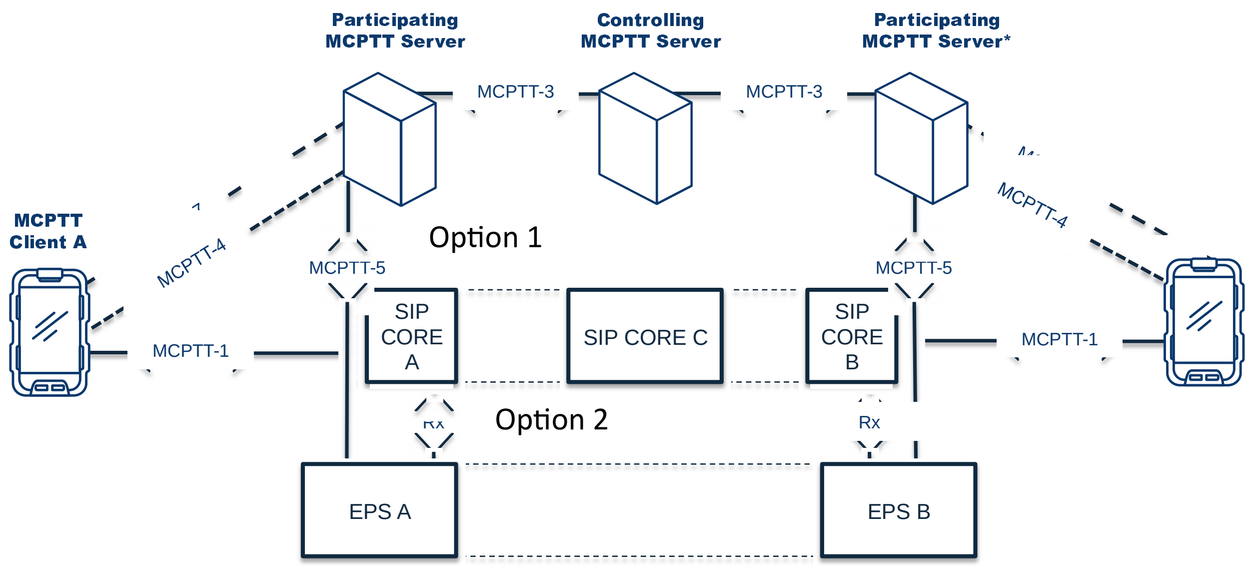

Figure 11: CFG_ONN_UNI-MC-LTE-1 Application plane interfaces

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 and above related interfaces). Similarly to the rest of the section an equivalent figure for MCData and MCVideo with the associated reference points would apply.

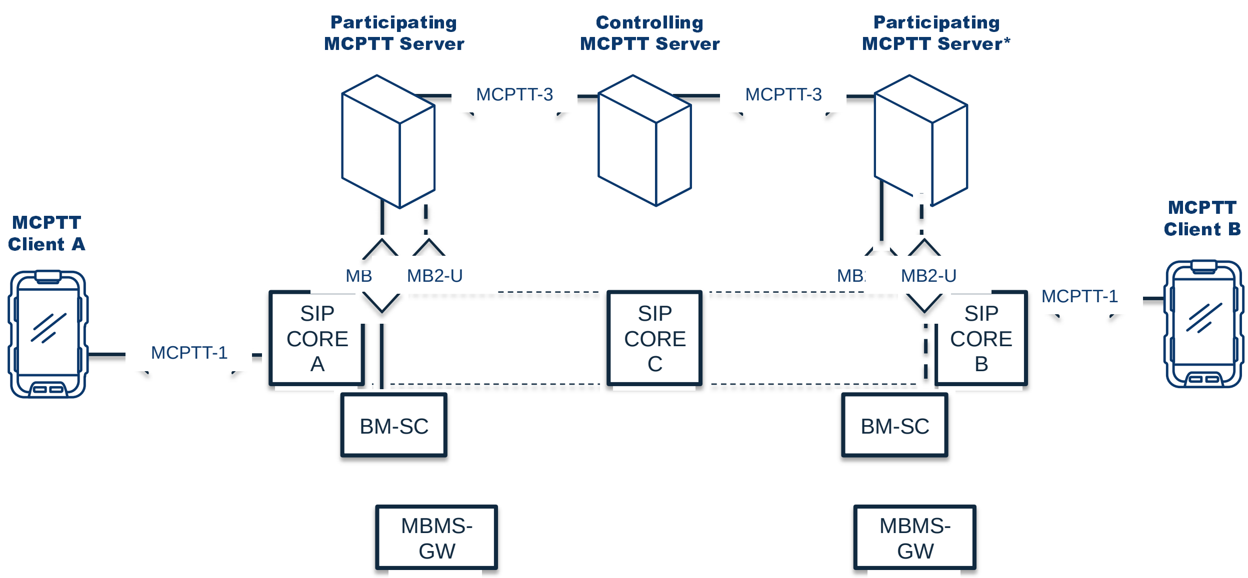

Figure 12: CFG_ONN_MULTI-MC-LTE-1 Application plane interfaces

5.5 CFG_OFF-GEN-1

This configuration comprises a set of UEs that can reach each other over IP level in an off-network generic scenarios including any ProSE configuration (over LTE, 5G NR sidelink, single or multi hop, using layer two broadcast, groupcast, UE-to-network relaying, etc.).

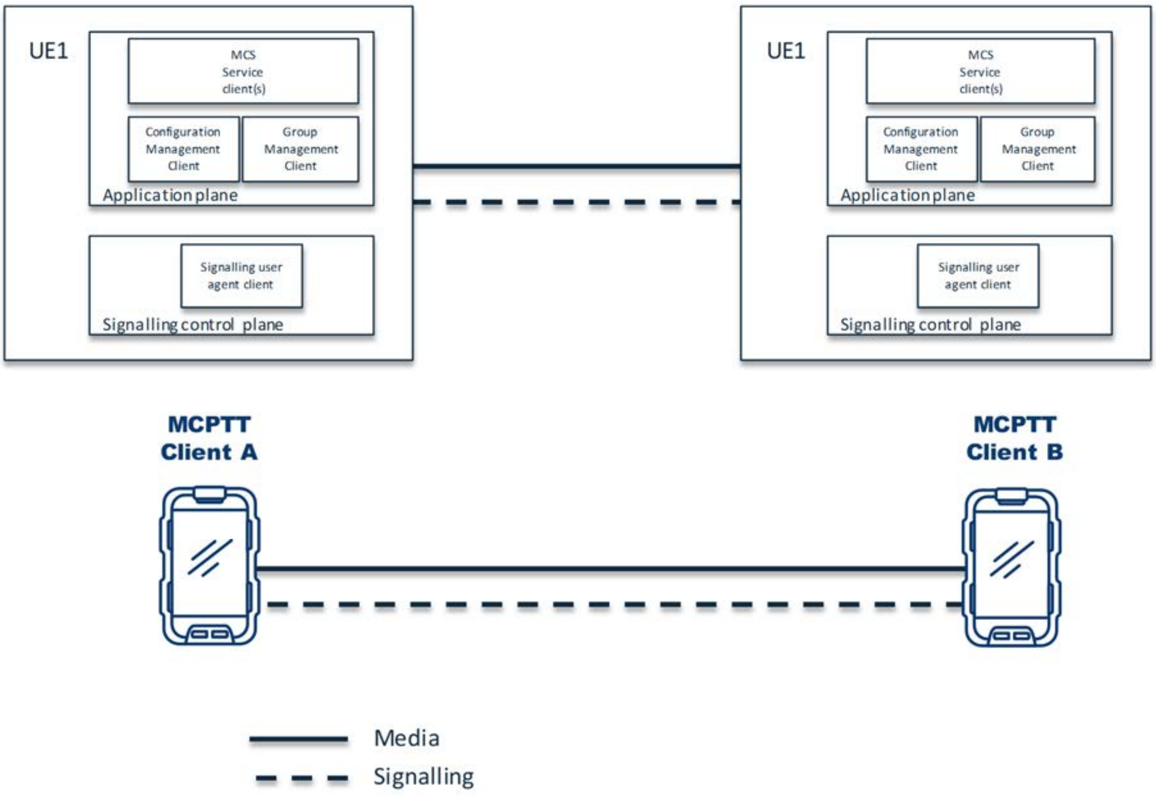

Figure 12a: CFG_OFF-1 Application plane interfaces

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 QCIs?	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]		

Item	Feature	ID	Ref	Status	Support
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]		
16	Does MCPTT-Client support Off-Network MCPTT private and group calling?	MCPTT-Client_OFF-MCPTT-CALL	[9]		
17	Does MCPTT-Client support Off-Network MCPTT floor controlling?	MCPTT-Client_OFF-MCPTT-FC	[10]		

6.4 MCData Client Features

Table 5: IMS features

Item	Feature	ID	Ref	Status	Support
1	Does MCData-Client support Authentication and ID retrieval from IDMS?	MCData-Client_IDMS	[12]		
2	Does MCData-Client support PUBLISH Based Registration?	MCData-Client_PUBREG	[9]		
3	Does MCData-Client support REGISTER Based Registration?	MCData-Client_REGREG	[9]		
4	Does MCData-Client support On-Network MCData SDS over signalling plane?	MCData-Client_ONN-MCData-SDS-SP	[8]		
5	Does MCData-Client support On-Network MCData SDS over media plane?	MCData-Client_ONN-MCData-SDS-MP	[17]		
6	Does MCData-Client support On-Network MCData FD over signalling plane?	MCData-Client_ONN-MCData-FD-SP	[8]		
7	Does MCData-Client support On-Network MCData FD over media plane?	MCData-Client_ONN-MCData-FD-MP	[17]		
8	Does MCData-Client support Configuration retrieval from CMS?	MCData-Client_CMS	[14]		
9	Does MCData-Client support Key retrieval from KMS?	MCData-Client_KMS	[24]		
10	Does MCData-Client support Mission Critical APNs and QCIs?	MCData-Client_MC-APN	[4]		
11	Does MCData-Client support EMBMS?	MCData-Client_EMBMS	[19]		
12	Does MCData-Client support Location configuration and submission?	MCData-Client_LOC	[9]		
13	Does MCData-Client support Message Store capabilties?	MCData-Client_ONN-MCDATA-MS	[9]		
14	Does MCData-Client support Message Notification Channels?	MCData-Client_ONN-MCData-MNC	[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 QCIs?	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 3rd Party REGISTER?	IMS_3RDPARTYREG	[9]		
2	Does the IMS support MCPTT compatible Rx Interface in the P-CSCF?	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]		

Item	Feature	ID	Ref	Status	Support
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 MCData-Participating AS Features

Table 10: MCData-Participating AS features

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

6.10 MCData-Controlling AS Features

Table 11: MCData-Controlling AS features

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

Item	Feature	ID	Ref	Status	Support
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: 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

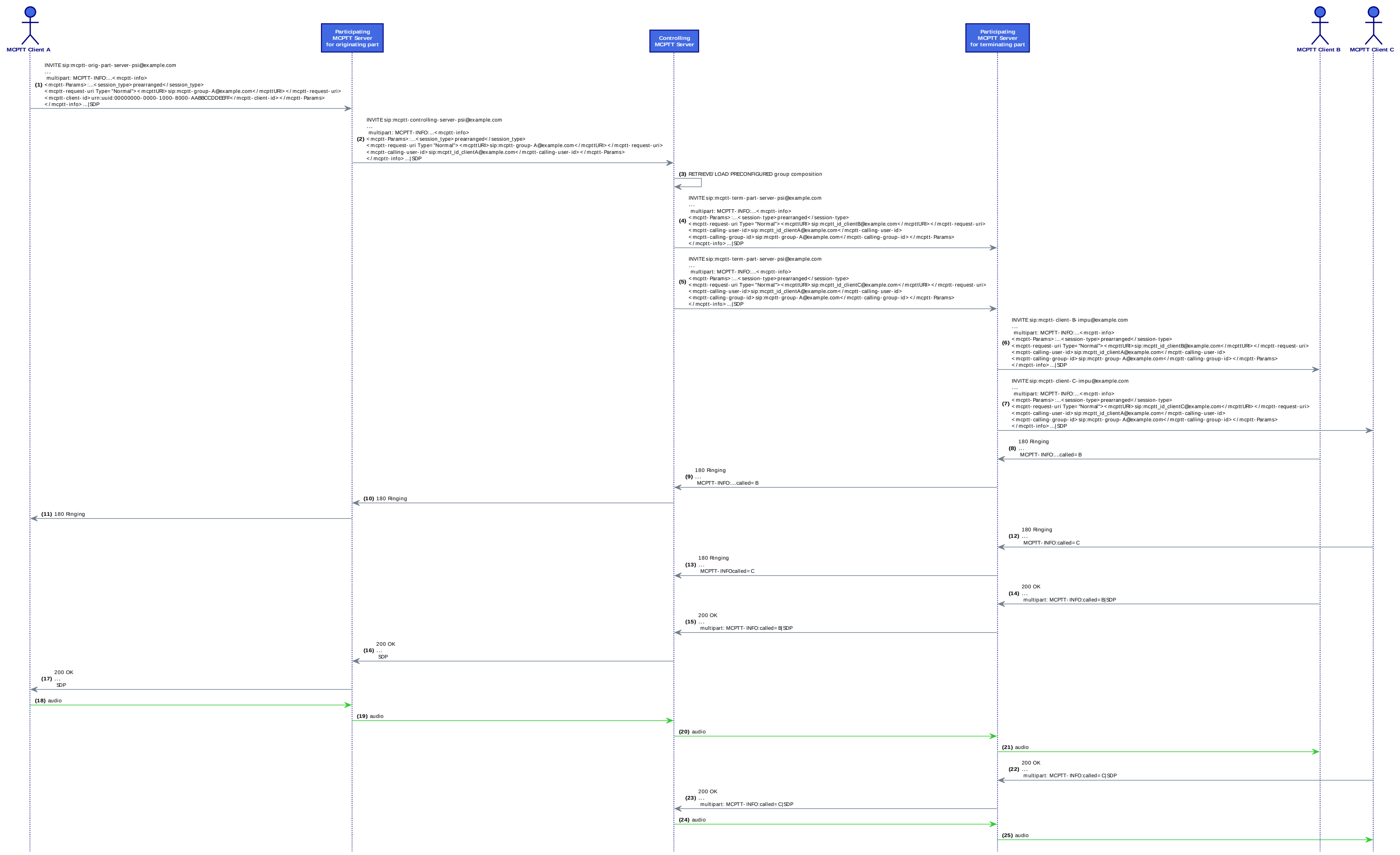

Figure 13: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/01 Message Sequence

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%3
A3gpp-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
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-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 17: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/01 ITD

Interoperability Test Description			
Identifier	CONN/ONN/GROUP/PREA/ONDEM/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity - among all elements of the specific scenario • 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 • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	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
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 9.2.2.2.11 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

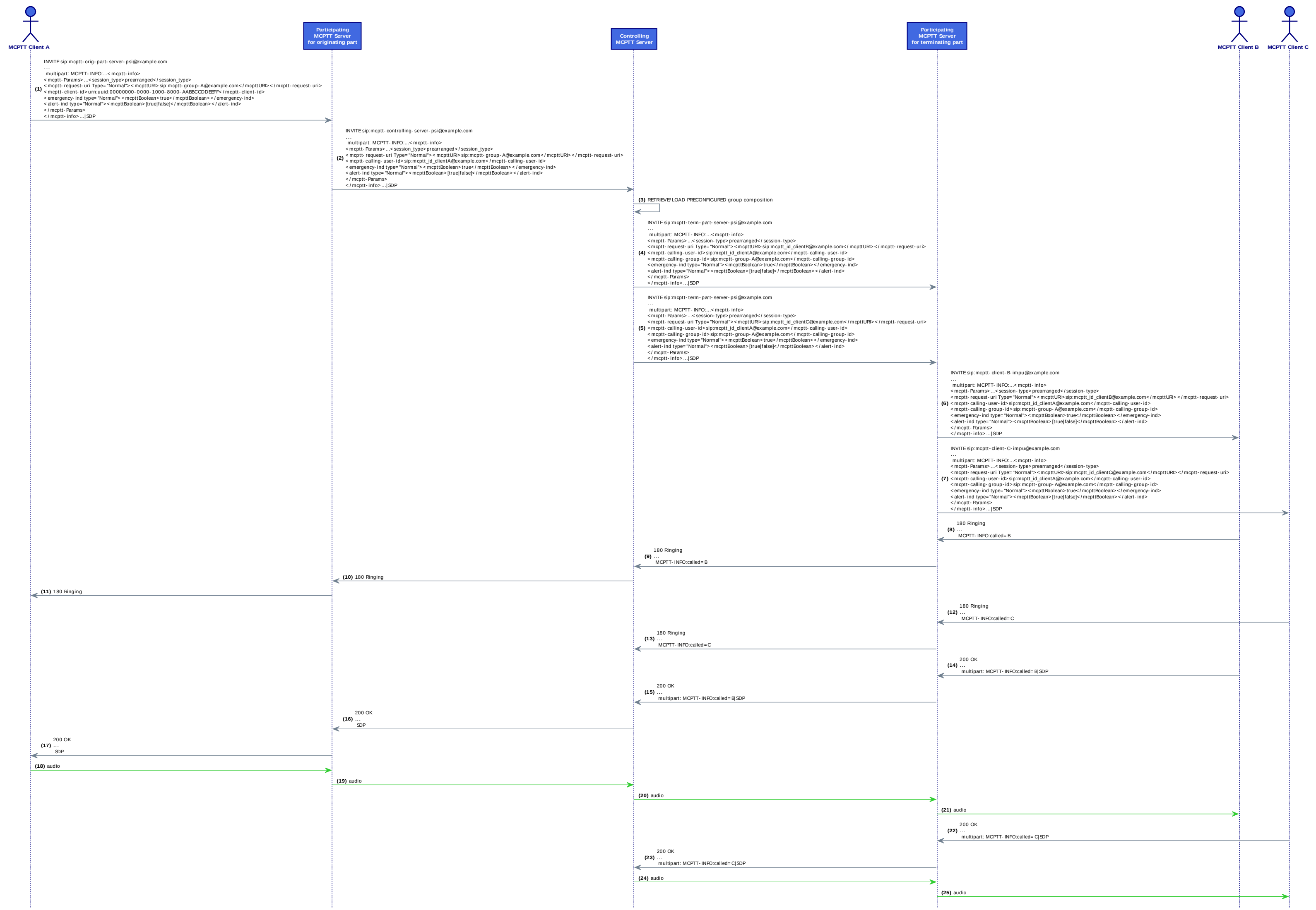

Figure 14: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/02 Message Sequence

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%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_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-AABBCCDDEEFF</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			
Identifier	CONN/ONN/GROUP/PREA/ONDEM/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a pre-arranged on demand emergency Group Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	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
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 9.2.2.2.11 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

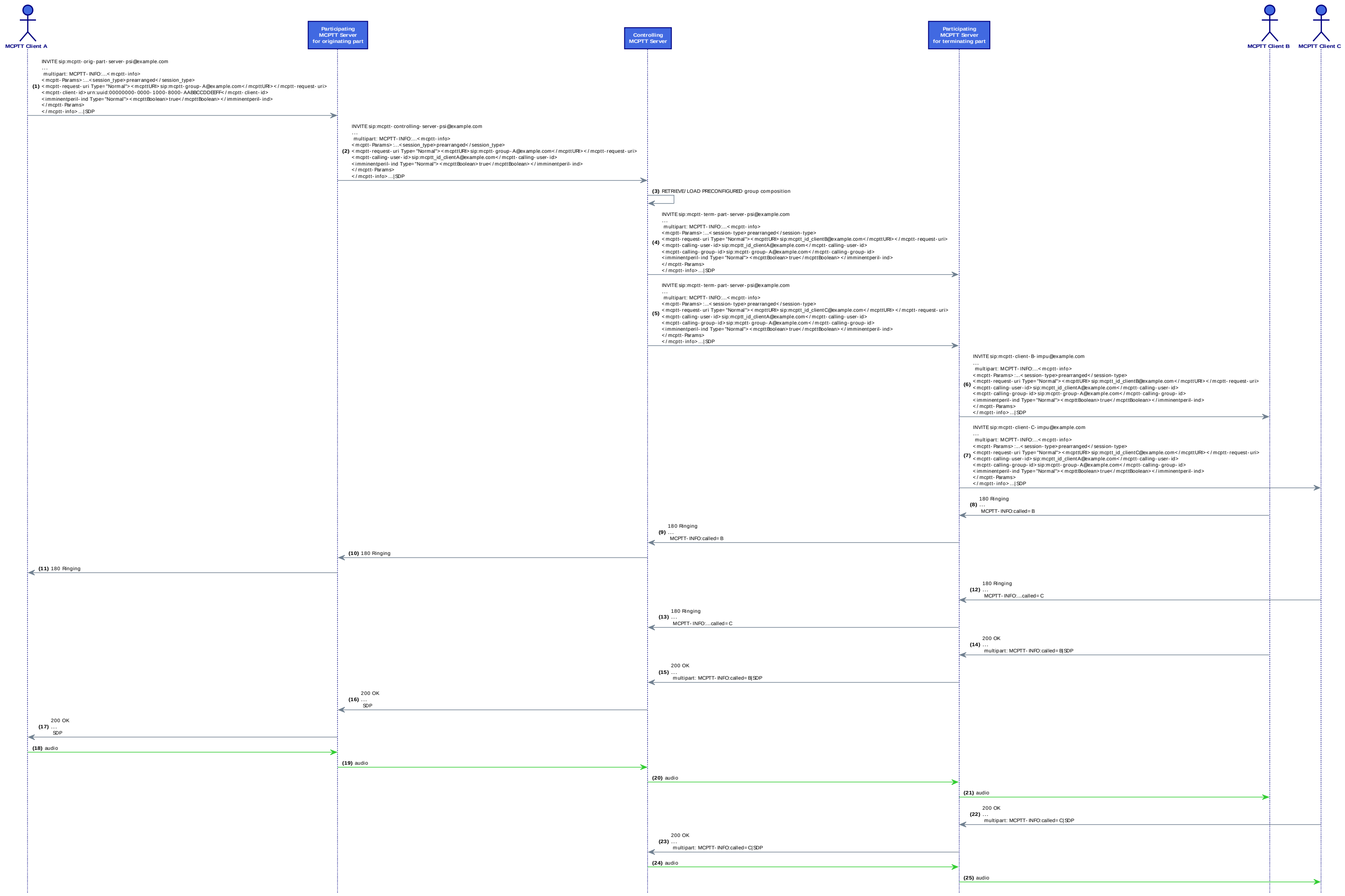

Figure 15: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/03 Message Sequence

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%3 A3gpp-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_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-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			
Identifier	CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of an Imminent Peril pre-arranged on demand GroupCall		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	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

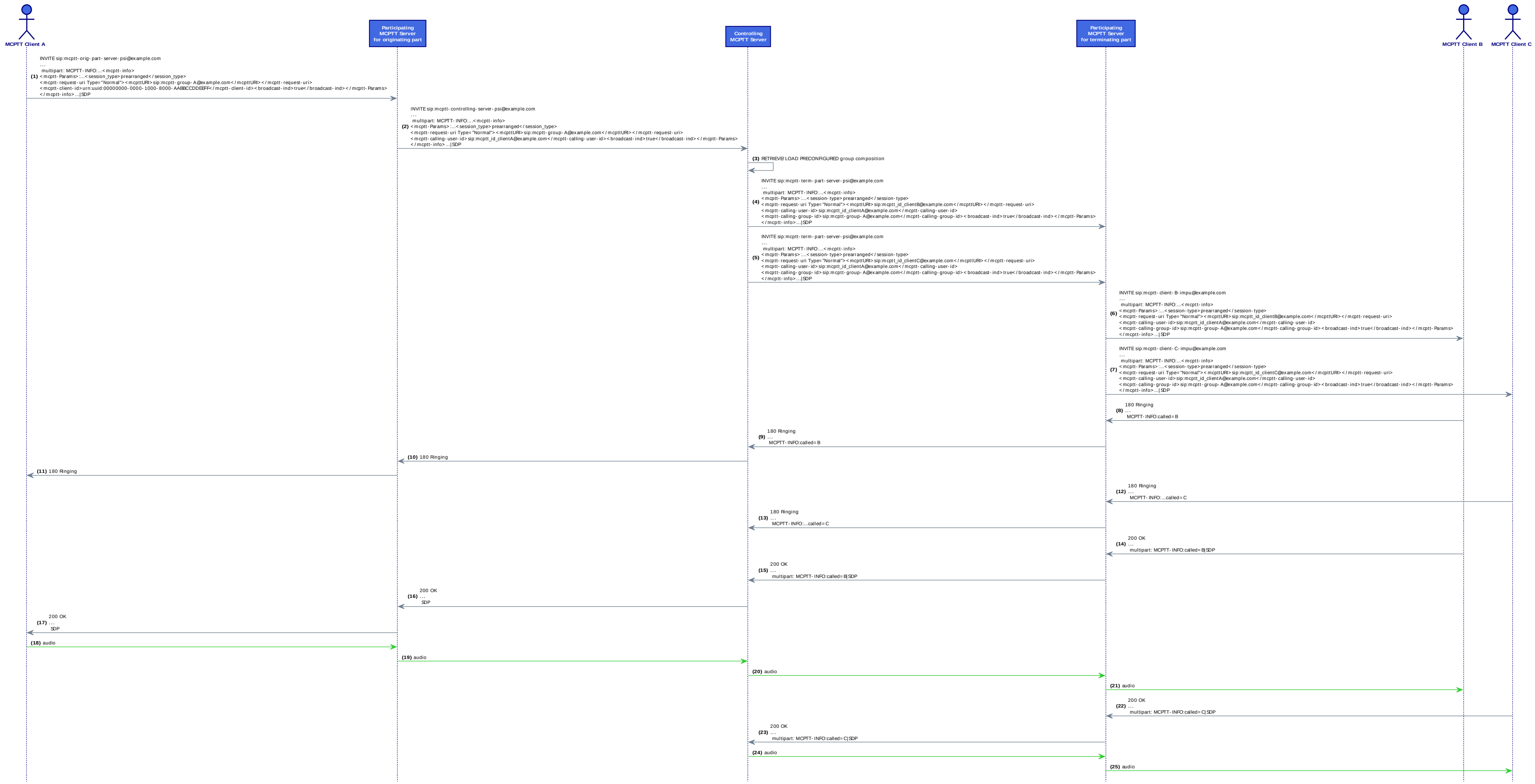

Figure 16: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/04 Message Sequence

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=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">
      <mcpttString>urn:uuid: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

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">CONN/ONN/GROUP/PREA/ONDEM/NFC/04</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a pre-arranged on demand Broadcast Group Call</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL
• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)
• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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
• Calling user is affiliated to the called group</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td></td><td>1</td><td>stimulus</td><td>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</td></tr>
<tr><td></td><td>2</td><td>check</td><td>Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS</td></tr>
<tr><td></td><td>3</td><td>check</td><td>INVITE received at the MCPTT controlling server</td></tr>
<tr><td></td><td>4</td><td>check</td><td>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</td></tr>
<tr><td></td><td>5</td><td>check</td><td>"n" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)</td></tr>
<tr><td></td><td>6</td><td>check</td><td>"n" INVITEs received at mcptt_id_clientX</td></tr>
<tr><td></td><td>7</td><td>check</td><td>"n" SIP dialogs established</td></tr>
<tr><td></td><td>8</td><td>verify</td><td>Call connected and multiple media flows exchanged</td></tr>
</table>

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

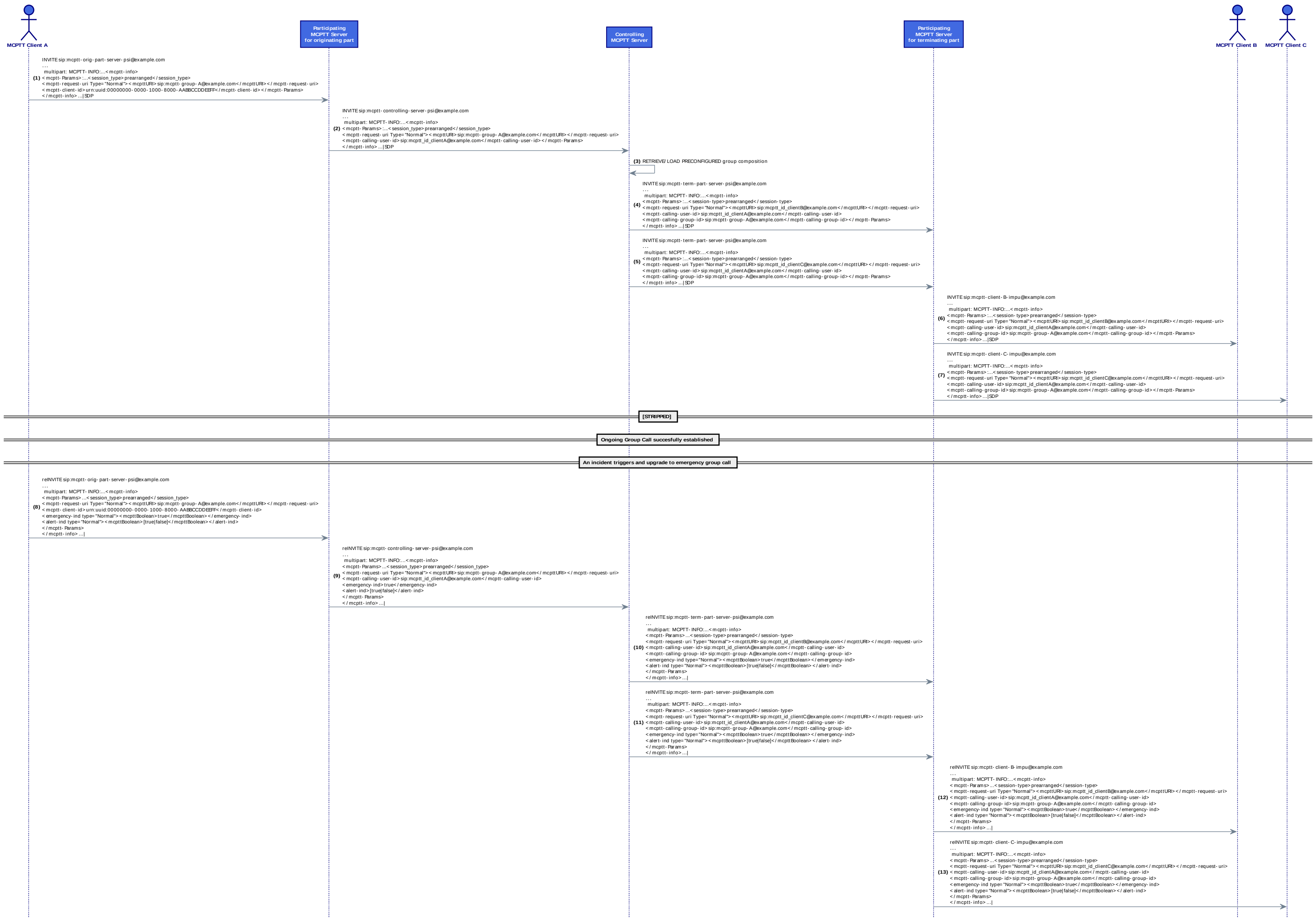

Figure 17: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/05 Message Sequence

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%3
    A3gpp-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_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-
        AABBCCDDEEFF</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			
Identifier	CONN/ONN/GROUP/PREA/ONDEM/NFC/05		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for a Group Call that is upgraded to Imminent Peril or Emergency		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Calling user is affiliated to the called group • Group Call properly established		
Test Sequence	**Step**	**Type**	**Description**
	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

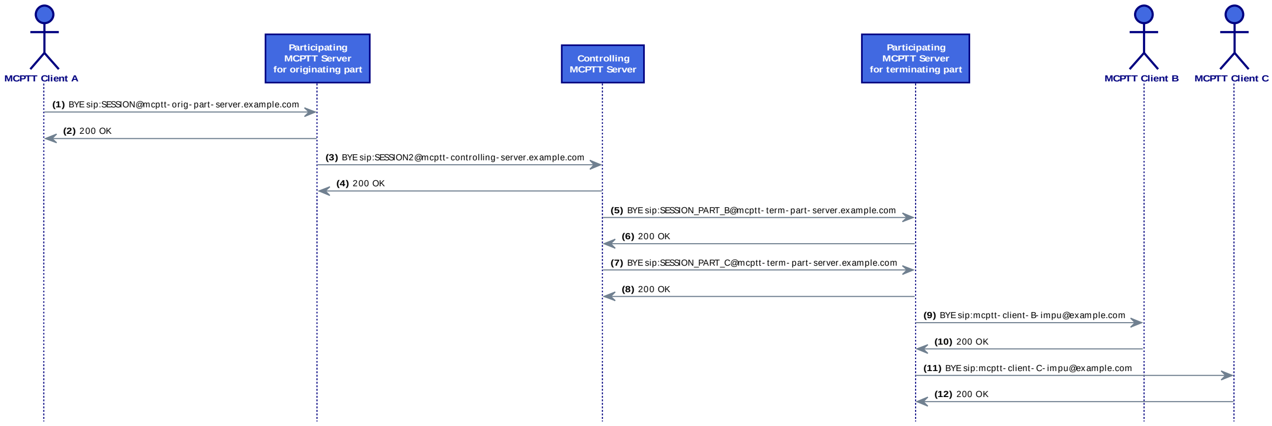

Figure 18: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/06 Message Sequence

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			
Identifier	CONN/ONN/GROUP/PREA/ONDEM/NFC/06		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling needed to terminate an ongoing Chat Group Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Calling user is affiliated to the called group • Ongoing Group Call		
Test Sequence	**Step**	**Type**	**Description**
	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 stablished
	3	stimulus	Calling user triggers the termination of the call by sending a BYE message
	4	verify	Group call properly terminated
NOTE: 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

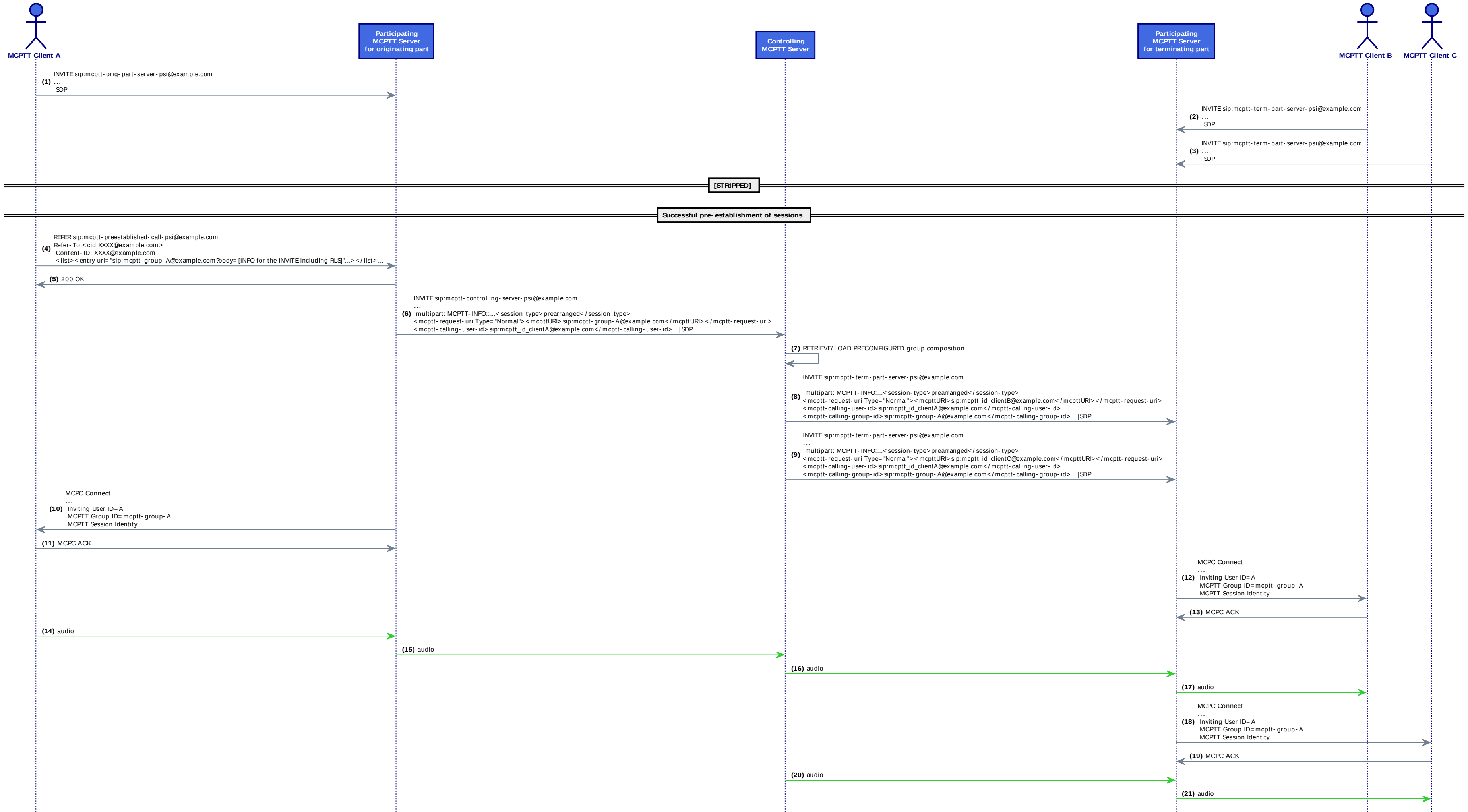

Figure 19: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/01 Message Sequence

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%3AmcpttInfo%3A1.0%22%20xmlns%3Axsi%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%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			
Identifier	CONN/ONN/GROUP/PREA/PRE/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for a prearranged Group Call using pre-stablished session		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Calling user is affiliated to the called group • Pre-established sessions and prearranged Group Call already established		
Test Sequence	**Step**	**Type**	**Description**
	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

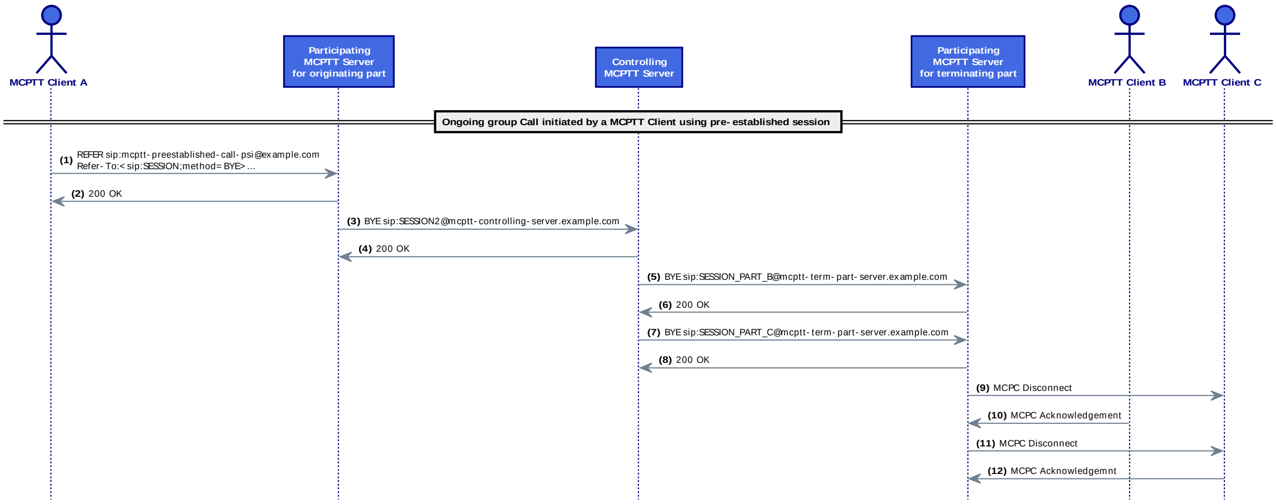

Figure 20: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/02 Message Sequence

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			
Identifier	CONN/ONN/GROUP/PREA/PRE/NFC/02		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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/IMSCalling user is affiliated to the called group • Ongoing pre-arranged Group Call with all members using pre-established sessions		
Test Sequence	**Step**	**Type**	**Description**
	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

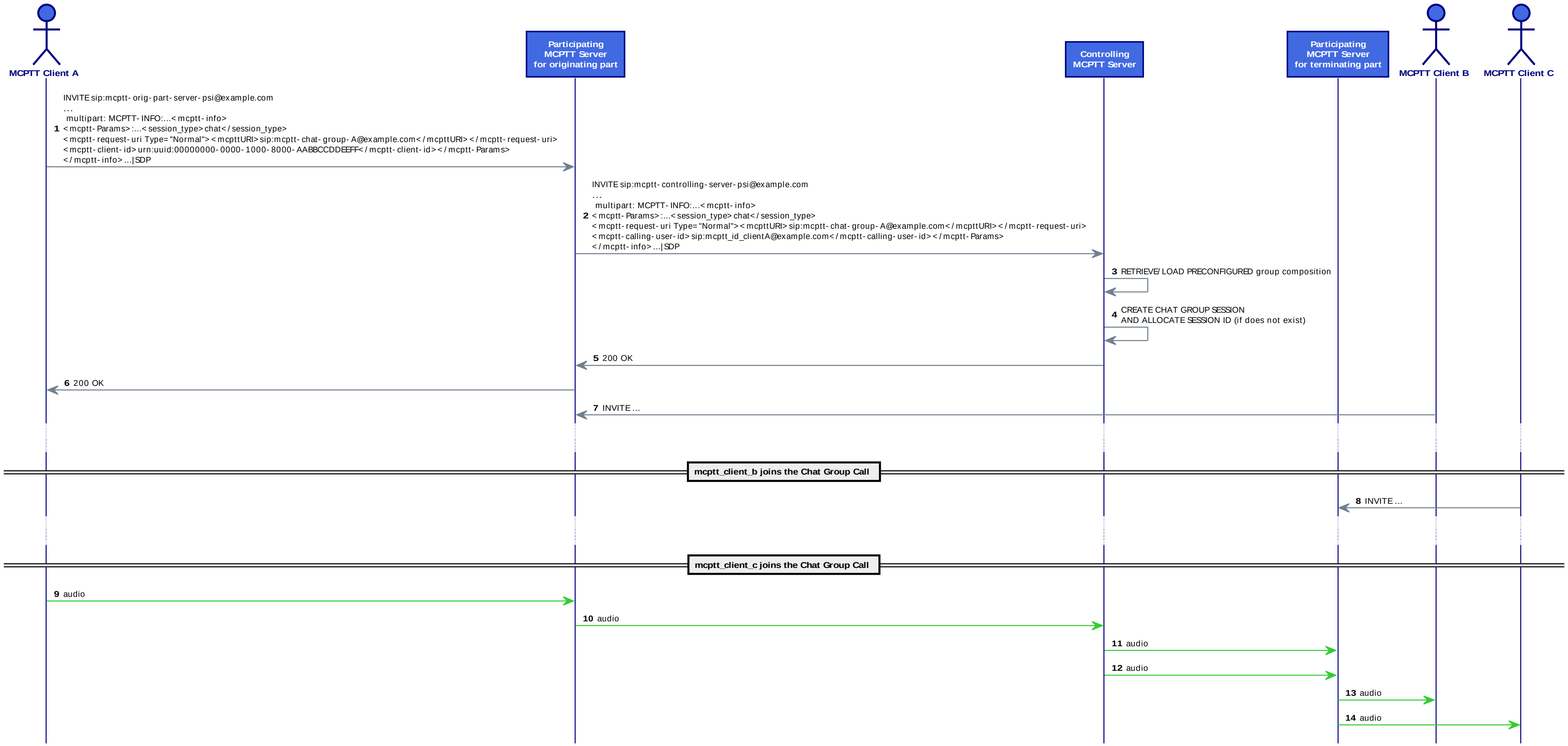

Figure 21: CONN-MCPTT/ONNGROUP/CHAT/ONDEM/NFC/01 Message Sequence

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%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_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-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			
Identifier	CONN/GROUP/CHAT/ONDEM/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of an on-demand Chat Group Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 and users properly affiliated to the called chat group		
Test Sequence	**Step**	**Type**	**Description**
	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

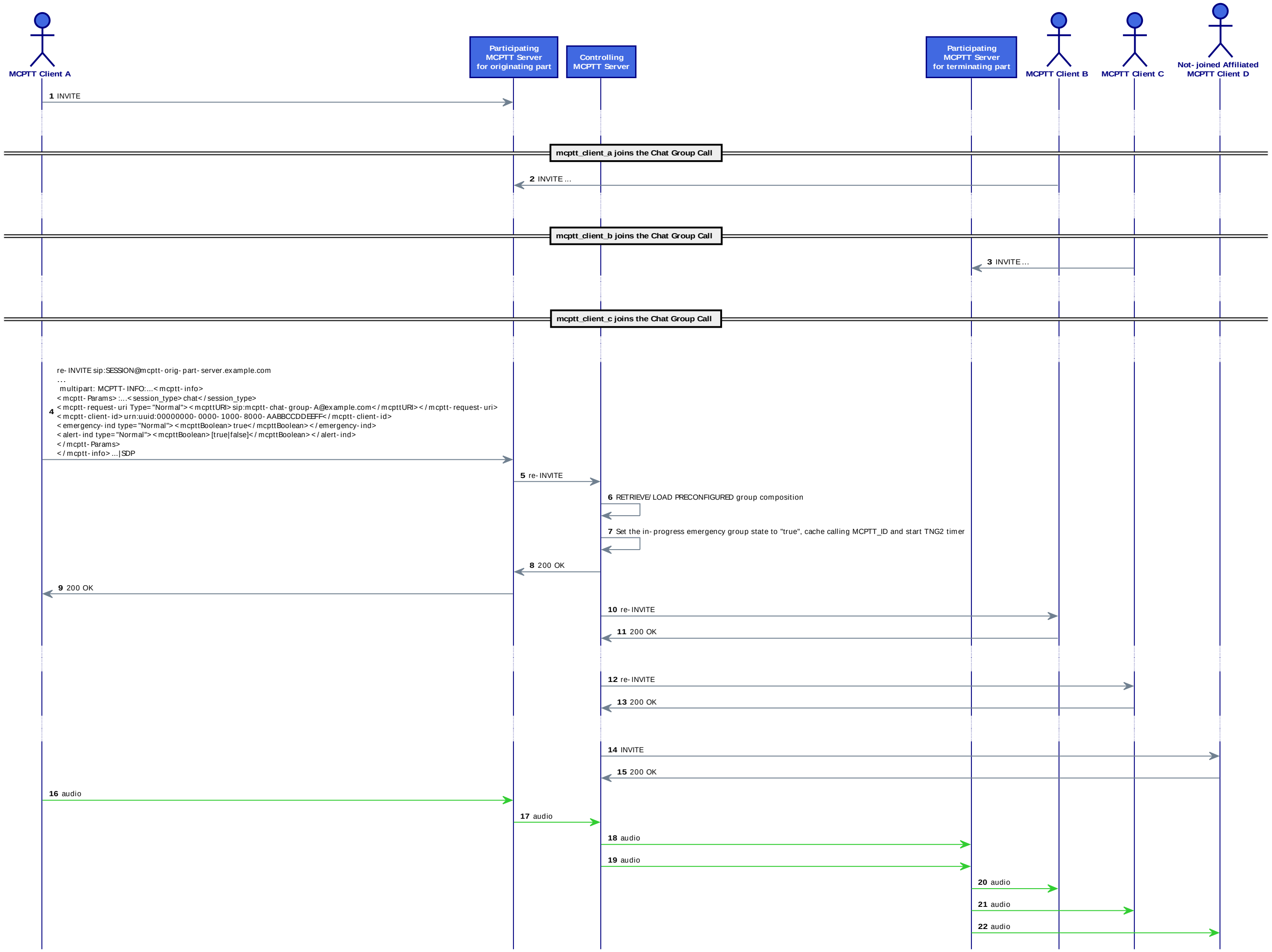

Figure 22: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/02 Message Sequence

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%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_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			
Identifier	CONN/GROUP/CHAT/ONDEM/NFC/02		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 and users properly affiliated to the called chat group • Ongoing on-demand chat Group Call where Clients A, B and C have joined (as in clause 7.2.9) while D has not		
Test Sequence	**Step**	**Type**	**Description**
	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

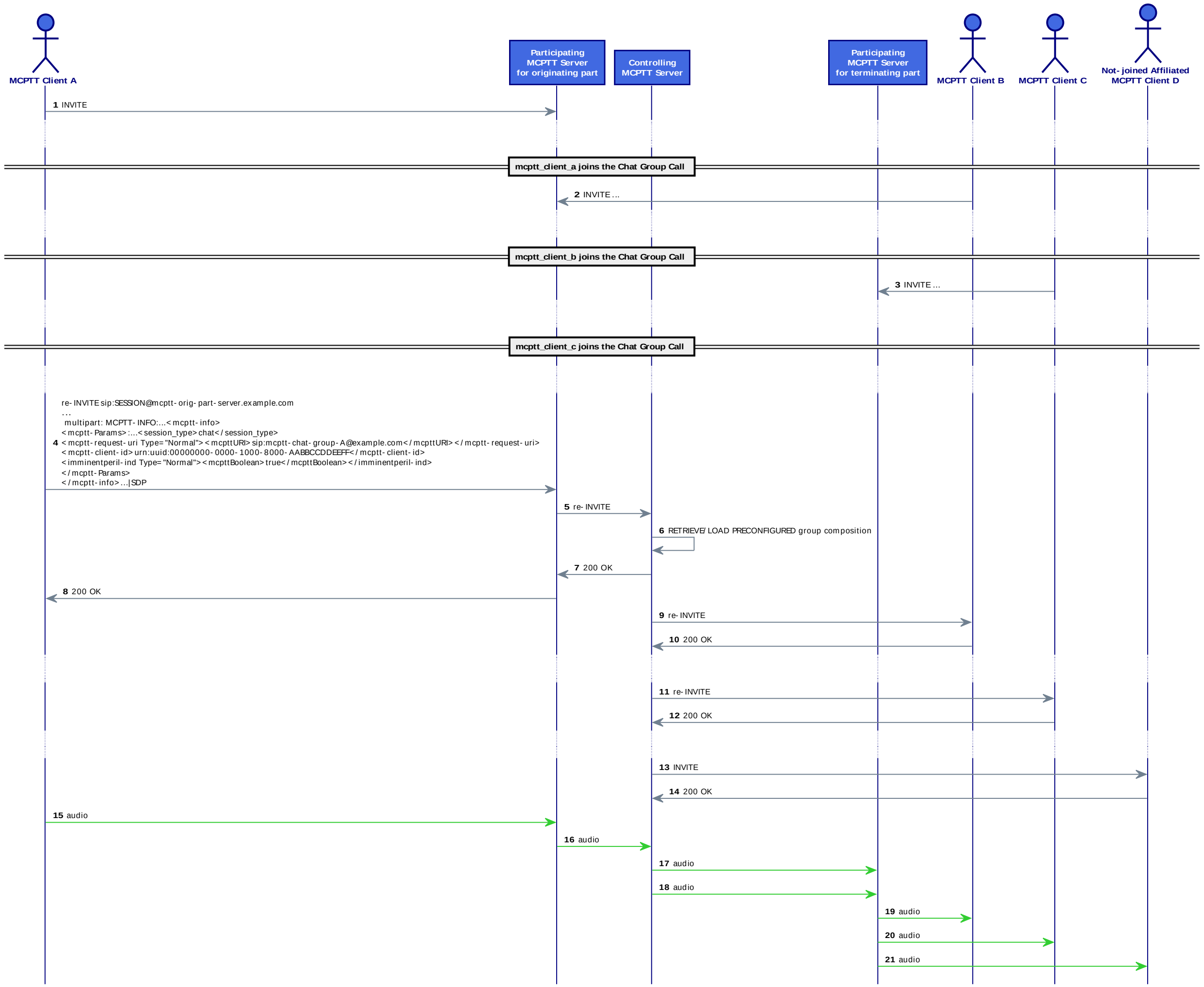

Figure 23: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/03 Message Sequence

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%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_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			
Identifier	CONN/GROUP/CHAT/ONDEM/NFC/03		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 and users properly affiliated to the called chat group • Ongoing on-demand chat Group Call where Clients A, B and C have joined (as in clause 7.2.9) while D has not		
Test Sequence	**Step**	**Type**	**Description**
	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

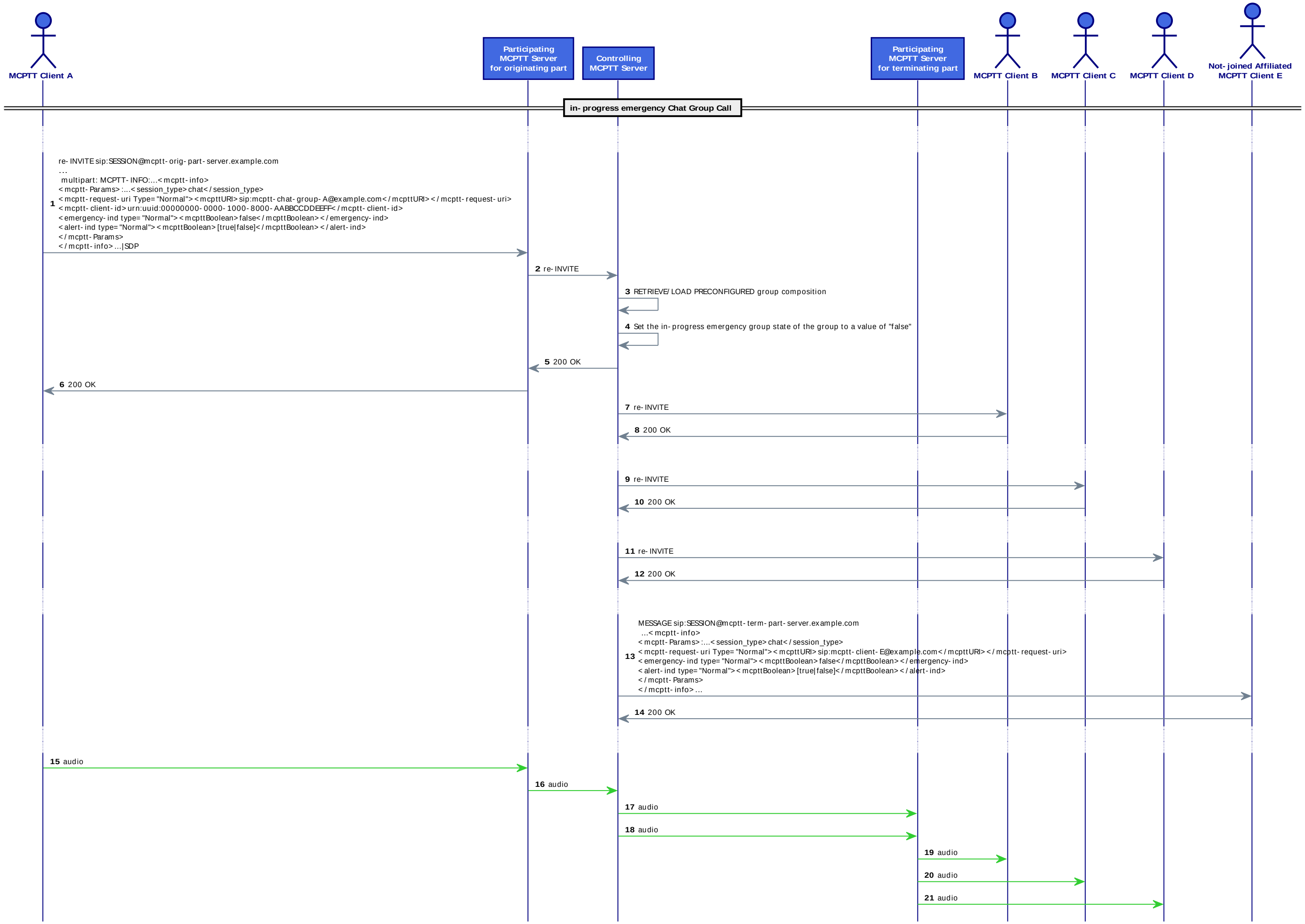

Figure 24: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/04 Message Sequence

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%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_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-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			
Identifier	CONN/GROUP/CHAT/ONDEM/NFC/04		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 and users properly affiliated to the called chat group • Ongoing on-demand emergency chat Group Call		
Test Sequence	**Step**	**Type**	**Description**
	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 MES-SAGE 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

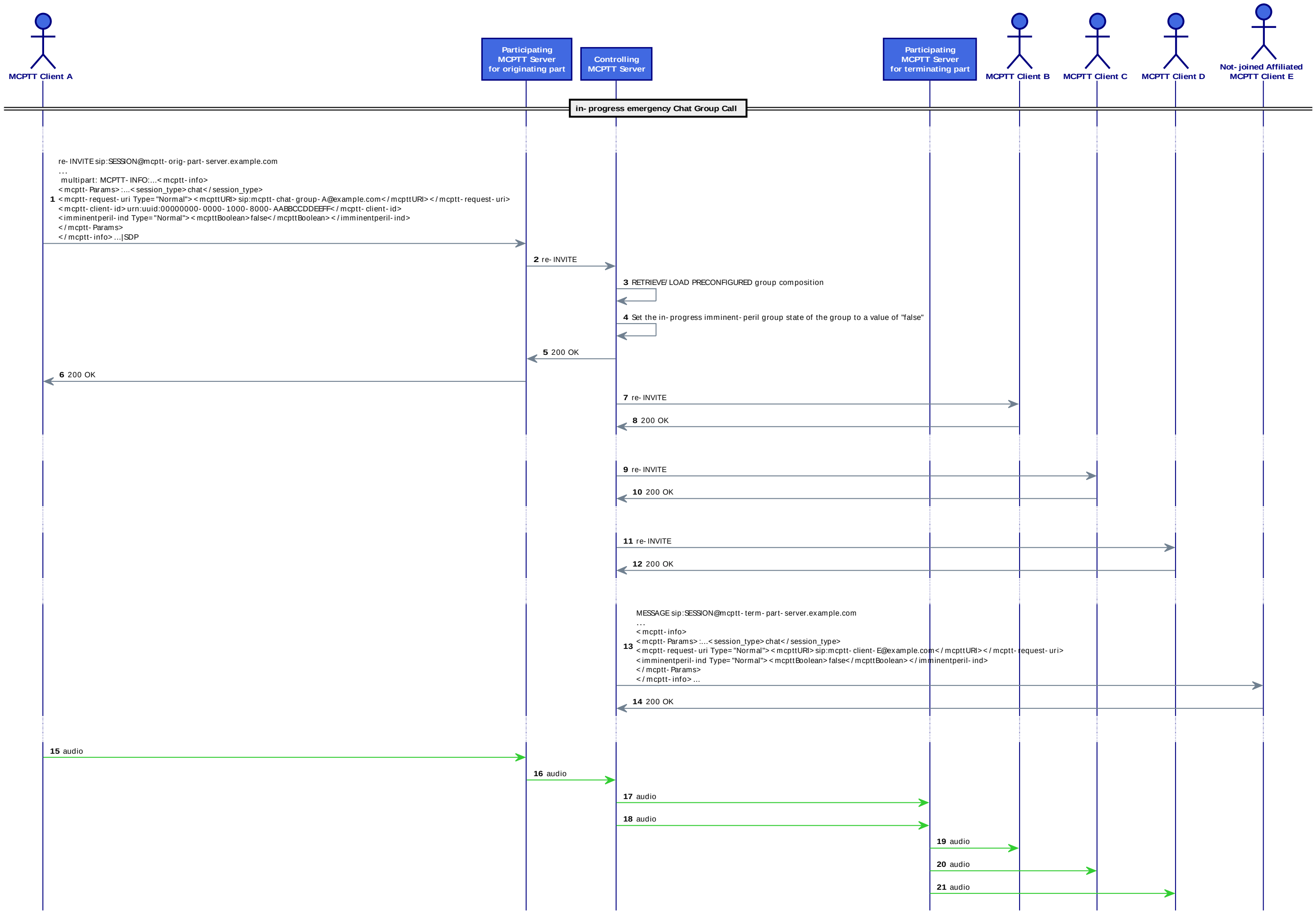

Figure 25: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/05 Message Sequence

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%3
A3gpp-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_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			
Identifier	CONN/GROUP/CHAT/ONDEM/NFC/05		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 and users properly affiliated to the called chat group • Ongoing on-demand imminent-peril chat Group Call		
Test Sequence	**Step**	**Type**	**Description**
	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

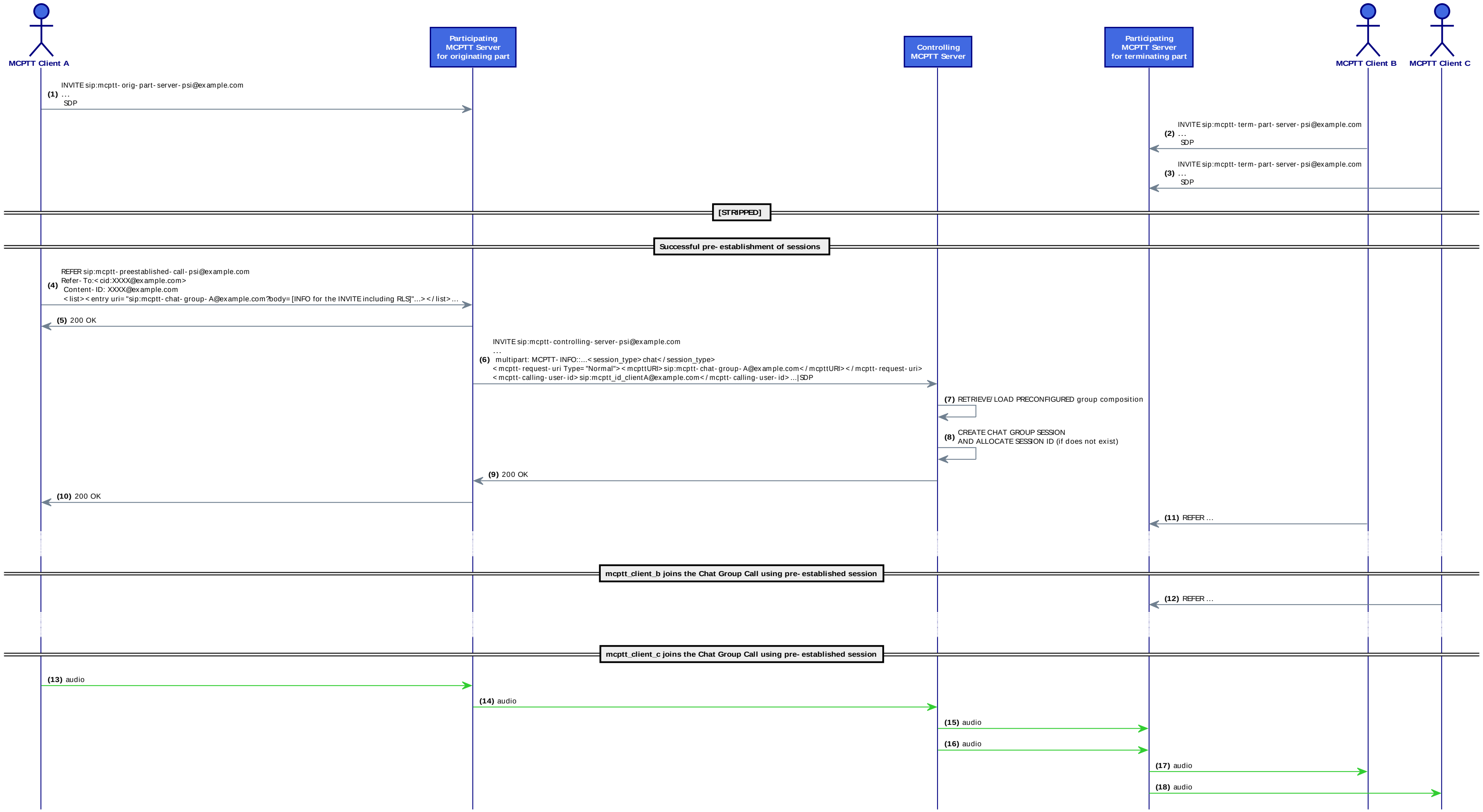

Figure 26: CONN-MCPTT/ONN/GROUP/CHAT/PRE/NFC/01 Message Sequence

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: 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%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%3D0%0Ao%3i....-YKP42ALY6Zy3ey--&amp;Answer-Mode=Auto&amp; 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			
Identifier	CONN/GROUP/CHAT/PRE/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a Chat Group Call using pre-established sessions		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 and users properly affiliated to the called chat group		
Test Sequence	**Step**	**Type**	**Description**
	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

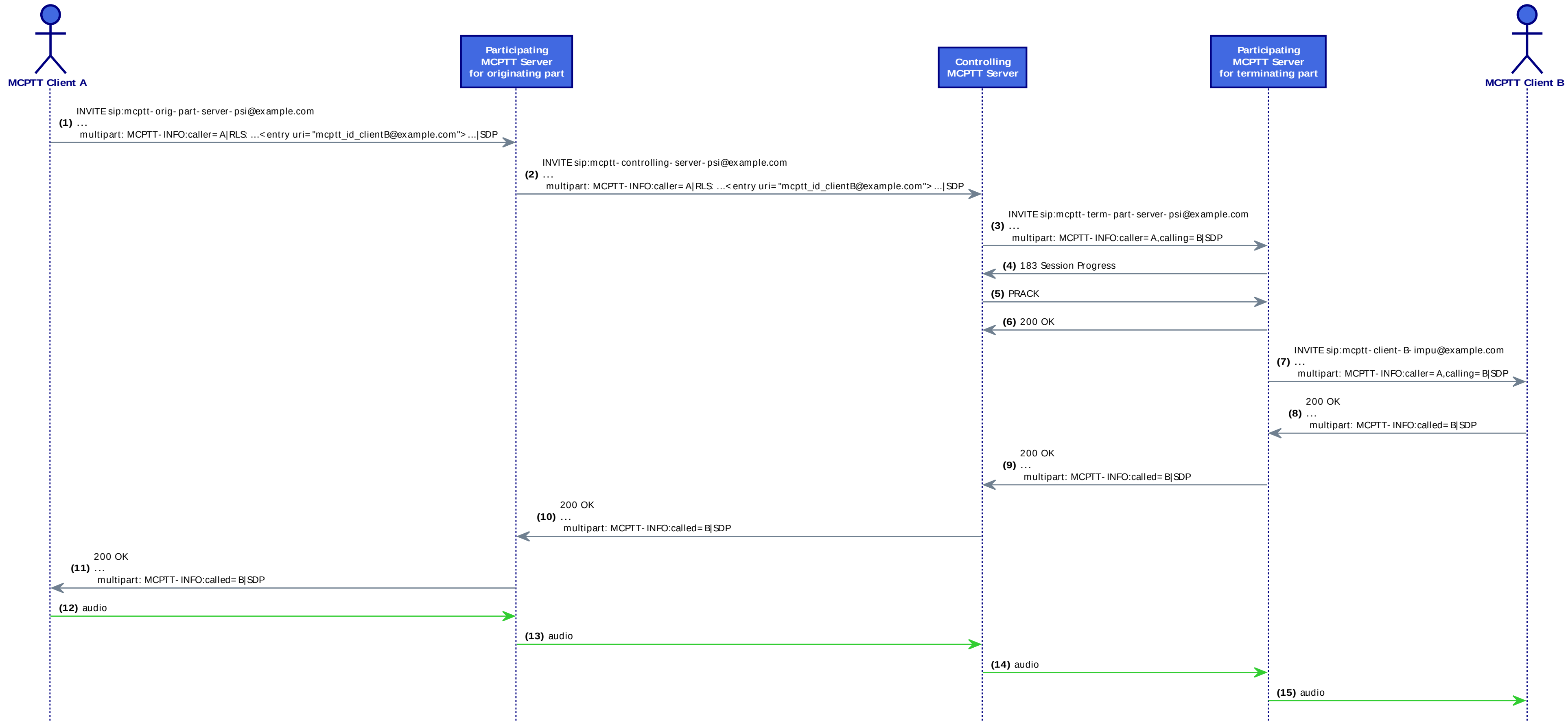

Figure 27: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/01 Message Sequence

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%3 A3gpp-
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

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with automatic commencement mode</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL
• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td></td><td>1</td><td>stimulus</td><td>User 1 (mcptt_id_clientA@example.com) calls User 2 (mcptt_id_clientB@example.com)</td></tr>
<tr><td></td><td>2</td><td>check</td><td>Dialog creating INVITE received at the MCPTT participating server of User 1</td></tr>
<tr><td></td><td>3</td><td>check</td><td>The participating server adapts the mcptt-info accordingly and creates an INVITE to the controlling server</td></tr>
<tr><td></td><td>4</td><td>check</td><td>The controlling server check permissions and forward the INVITE to the participating server of the callee</td></tr>
<tr><td></td><td>5</td><td>check</td><td>Upon arrival of the INVITE adapted by the terminating participating function at User 2 the call is automatically taken</td></tr>
<tr><td></td><td>6</td><td>verify</td><td>Call connected and media flows exchanged</td></tr>
</table>

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

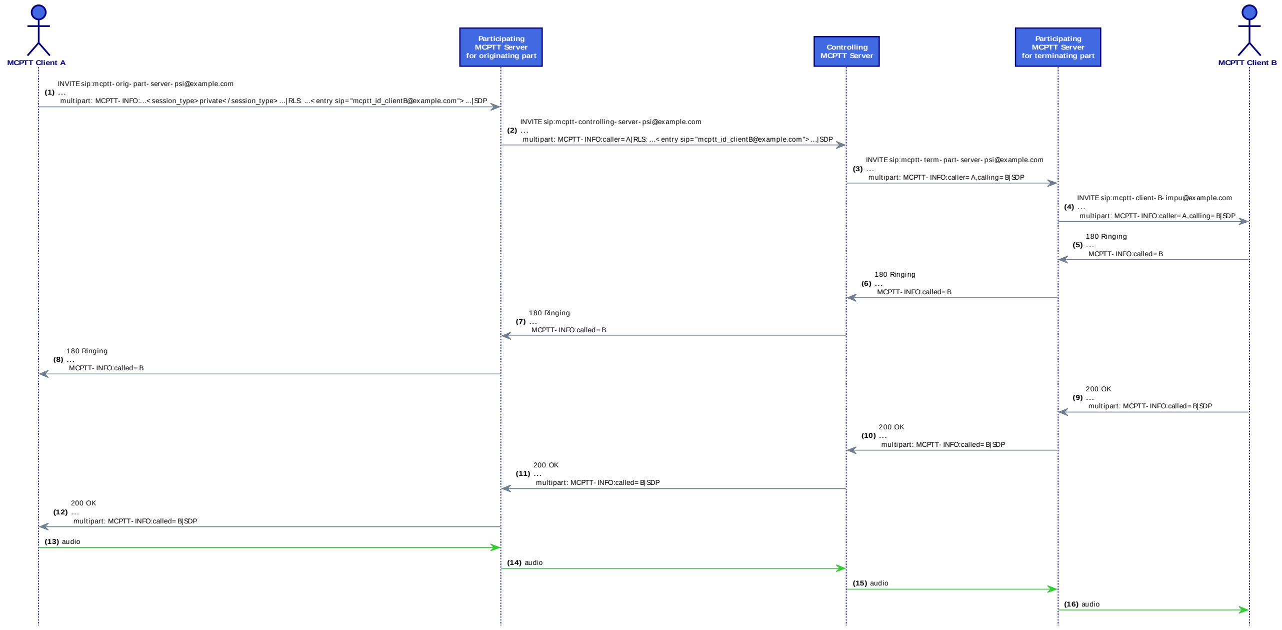

Figure 28: CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WFC/NFC/01 Message Sequence

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			
Identifier	CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WFC/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with manual commencement mode		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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

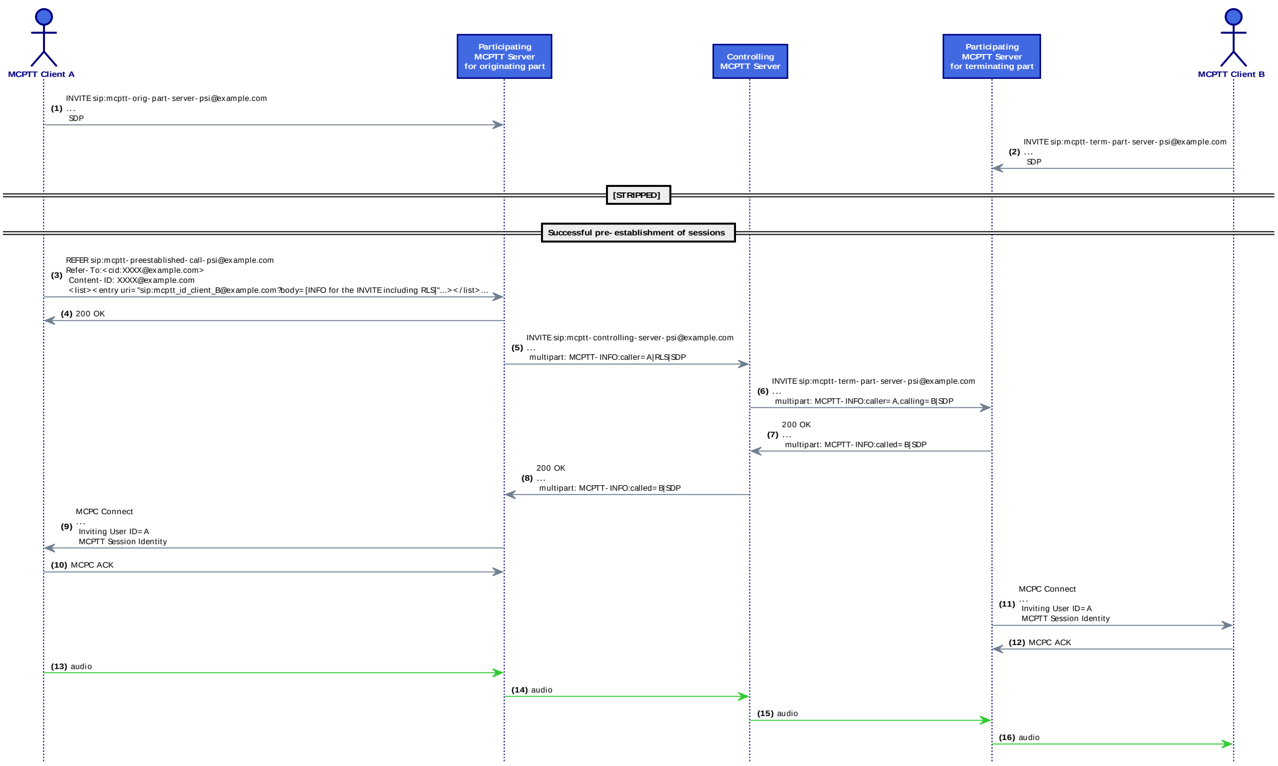

Figure 29: CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/01 Message Sequence

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
```

```
%20%0A%20%20%3Cmcptt-Params%3E%20%0A%20%20%20%20%3Csession-type%3Eprivate%3
C%2Fsession-type%3E%0A%20%20%20%20%3Cmcptt-calling-user-id%3
Esip:mcptt_id_clientA@example.com%3C%2Fmcptt-calling-user-id%3E%20%0A
%20%20%3C%2Fmcptt-Params%3E%20%0A%3C%2Fmcpttinfo%3E%20%0A%0
A--YKP42ALY6Zy3ey%0AContent-Type%3A%20application%2Fresource-lists%2Bxml%0A
%0A%3C%3Fxml%20version%3D%221.0%22%20encoding%3D%22UTF-8%22%3F%3E%0A%3
Cresource-lists%20xmlns%3D%22urn%3Aietf%3Aparams%3Axml%3Ans%3
Aresource-lists%22%20xmlns%3Acc%3D%22urn%3Aietf%3Aparams%3Axml%3Ans%3
Acopycontrol%22%3E%0A%20%20%3Clist%3E%0A%20%20%20%20%3Centry%20uri%3D%22
sip:mcptt_id_clientB@example.com%22%20cc%3AcopyControl%3D%22to%22%2F%3E%0A
%20%20%3C%2Flist%3E%0A%3C%2Fresource-lists%3E%0A%0A--YKP42ALY6Zy3ey%0
AContent-Type%3A%20application%2Fsdp%0A%0Av%3D0%0Ao%3DMCPTTCLIENT
%201183811731%204248272445%20IN%20IP4%20IP%0As%3D-%0Ac%3DIN%20IP4%20IP%0At
%3D0%200%0Am%3Daudio%2012000%20RTP%2FAVP%2099%0Aa%3Dlabel%3A1%0Ai%3Dspeech
%0Aa%3Drtpmap%3A99%20AMR-WB%2F16000%2F1%0Aa%3Dfmtp%3A99%20 mode-change-period%3D1%3B%20mode-change-
capability%3D2%3B%20
mode-change-neighbor%3D0%3B%20max-red%3D0%0Aa%3Dptime%3A20%0Aa%3Dmaxptime%3
A240%0Am%3Dapplication%201234%20udp%20MCPTT%0Aa%3Dfmtp%3AMCPTT%20
mc_queueing%3Bmc_priority%3D5%3Bmc_implicit_request%0A%0A--YKP42ALY6Zy3ey-&amp;Answer-
Mode=Auto&amp;Content-Type=multipart%2Fmixed%3Bboundary%3 DYKP42ALY6Zy3ey" cc:copyControl="to"/>
</list>
</resource-lists>
```


Interoperability Test Description

Table 33: CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/01 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with automatic commencement mode using pre-established sessions		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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 back to the participating of the caller
	7	check	The participating of the caller notifies him/her using MCPC (Floor Control) Connect message
	8	check	Similarly Client User 2 is notified with MCPC Connect and Call automatically accepted
	9	verify	Call connected and media flows exchanged

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

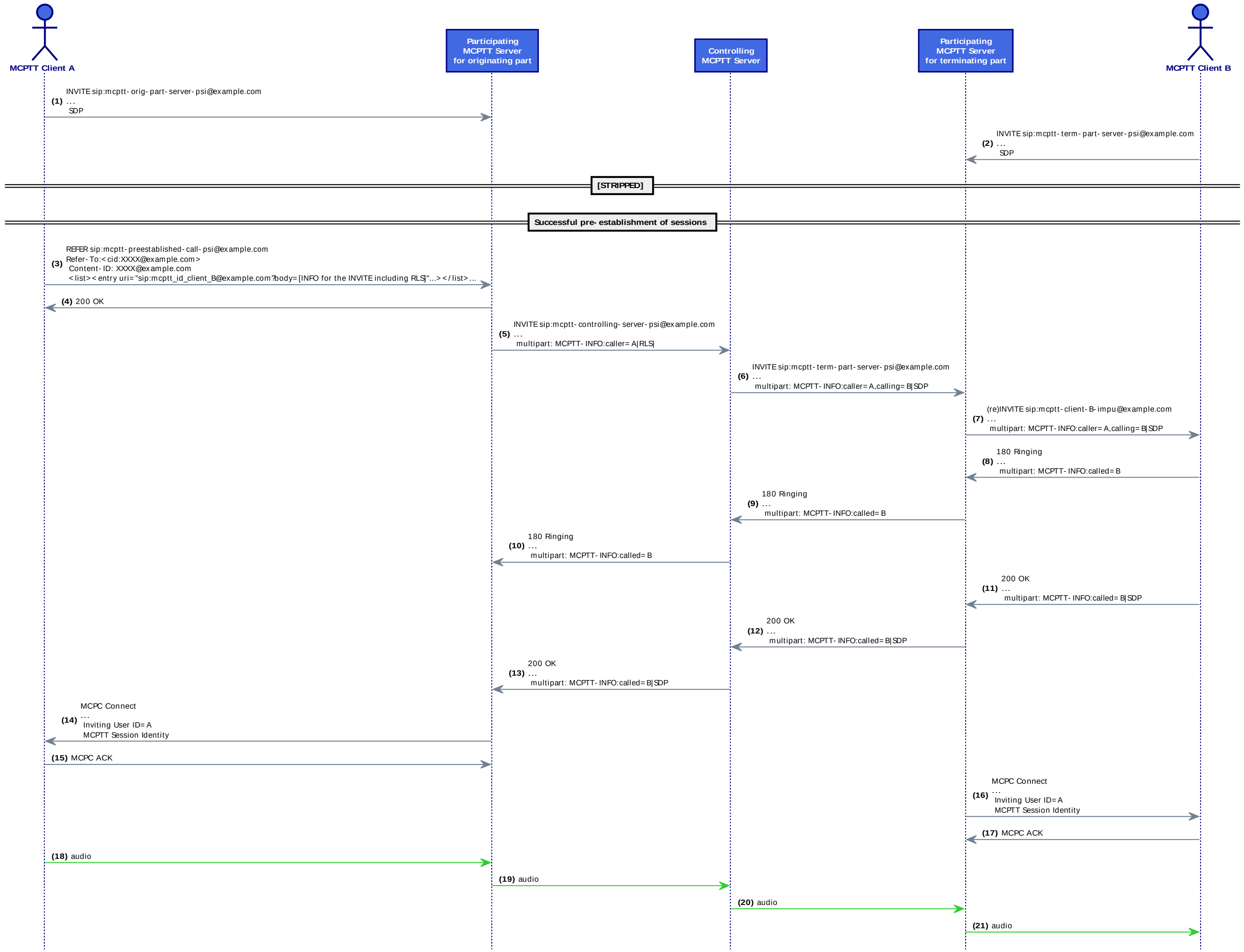

Figure 30: CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WFC/NFC/01 Message Sequence

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			
Identifier	CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WFC/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with manual commencement mode using pre-established sessions		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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

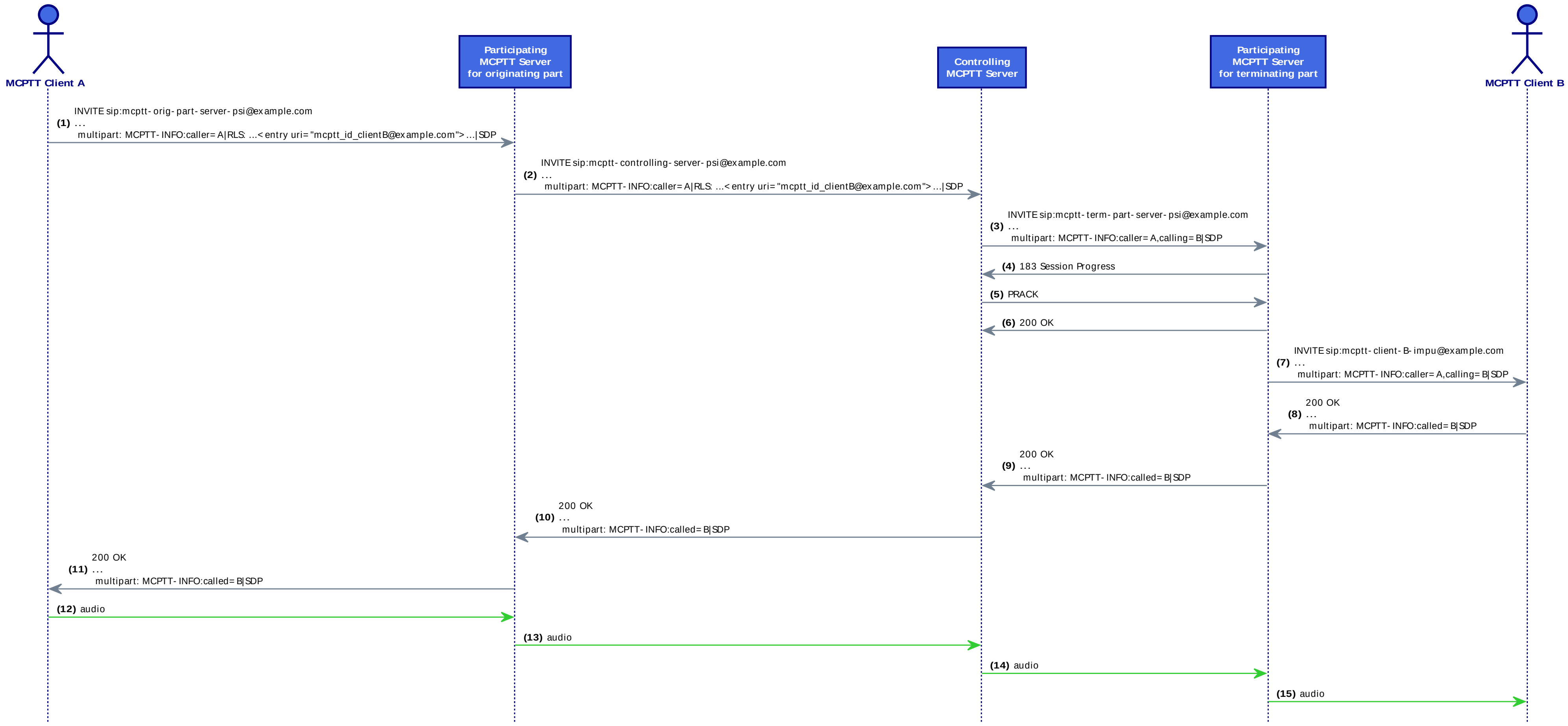

Figure 31: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WOFC/01 Message Sequence

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%3 A3gpp-
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_queing;mc_priority=5;mc_granted;mc_implicit_request
=========================================================
 ...

 --[boundary]
```

Interoperability Test Description

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

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WOFC/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call without floor control with automatic commencement mode</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL
• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="7">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>User 1 (mcptt_id_clientA@example.com) calls User 2 (mcptt_id_clientB@example.com)</td></tr>
<tr><td>2</td><td>check</td><td>Dialog creating INVITE received at the MCPTT participating server of User 1</td></tr>
<tr><td>3</td><td>check</td><td>The participating server adapts the mcptt-info accordingly and creates an INVITE to the controlling server</td></tr>
<tr><td>4</td><td>check</td><td>The controlling server check permissions and forward the INVITE to the participating server of the callee</td></tr>
<tr><td>5</td><td>check</td><td>Upon arrival of the INVITE adapted by the terminating participating function at User 2 the call is automatically taken</td></tr>
<tr><td>6</td><td>verify</td><td>Call connected and bidirectional media flows exchanged</td></tr>
</table>

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			
Identifier	CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WOFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call without floor control with manual commencement mode		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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			
Identifier	CONN-MCPTT/ONN/PRIV/AUTO/PRE/WOFC/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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			
Identifier	CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WOFC/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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

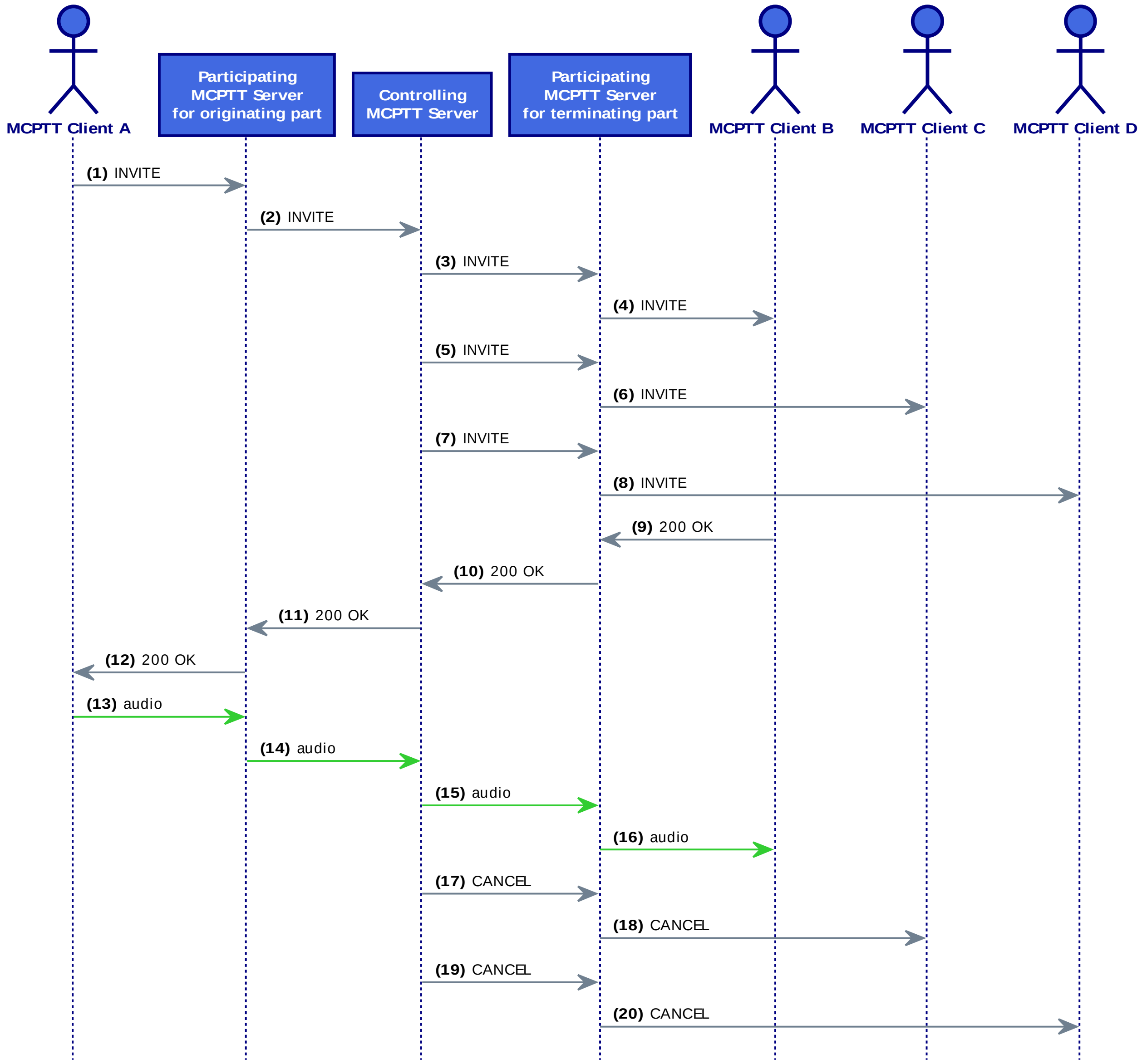

Figure 32: CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls a list of users (User 2, 3, 4, etc.) (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 of 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			
Identifier	CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WOFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls a list of users User 2, 3, 4, etc. (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 CONNMCPTT/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

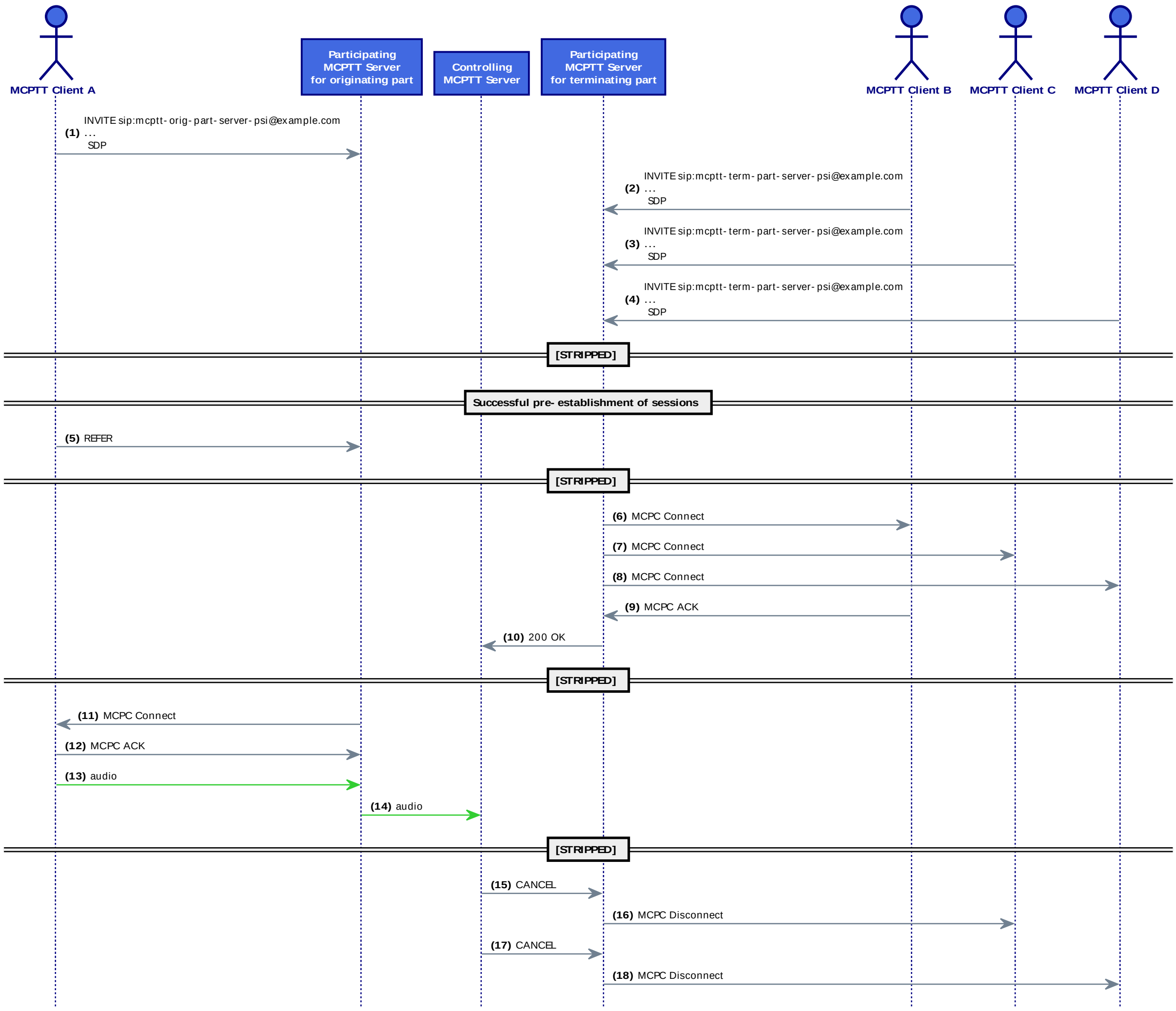

Figure 33: CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/01 Message Sequence

Message Details

`Trace Pending`

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

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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			
Identifier	CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WOFC/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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

7.2.27 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

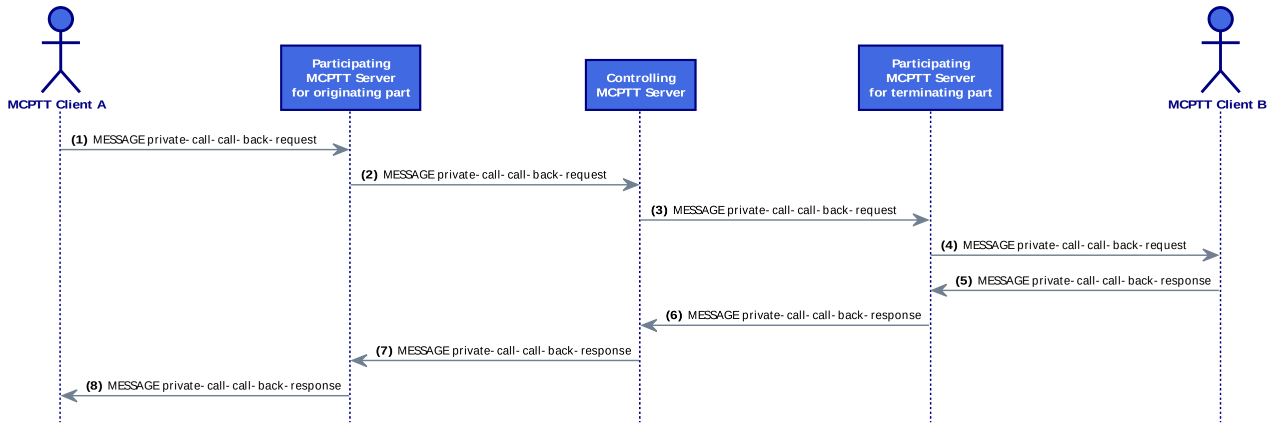

Figure 34: CONN-MCPTT/ONN/CALLBACK/SETUP/01 Message Sequence

Message Details

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

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/CALLBACK/SETUP/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
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 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

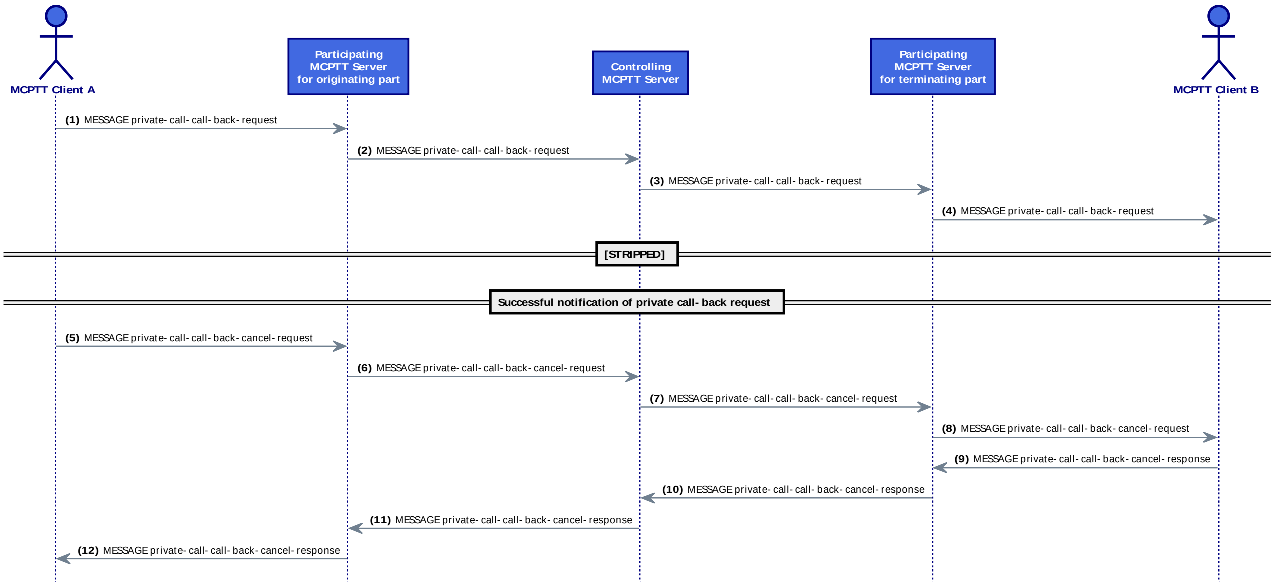

Figure 35: CONN-MCPTT/ONN/CALLBACK/CANCEL/01 Message Sequence

Message Details

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

Interoperability Test Description	
Identifier	CONN-MCPTT/ONN/CALLBACK/CANCEL/01
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Previous private call call-back received at User 2

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

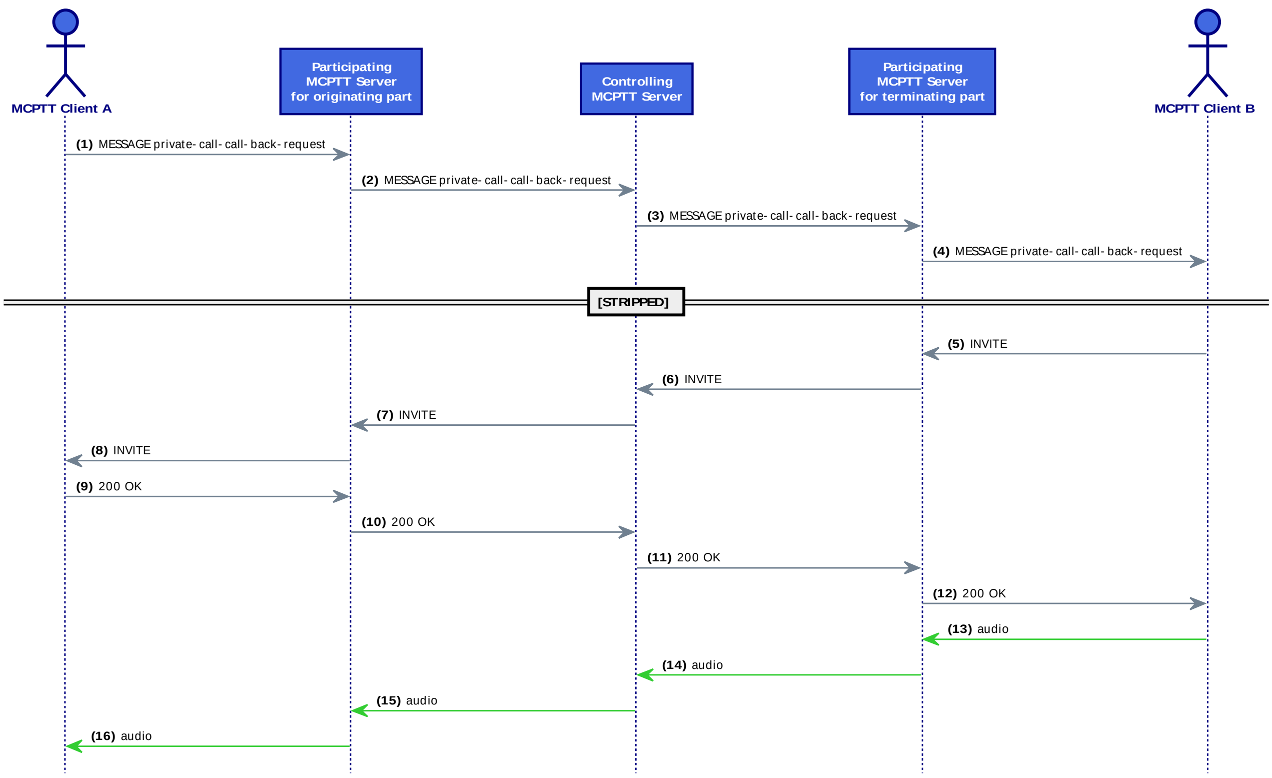

Figure 36: CONN-MCPTT/ONN/CALLBACK/FULFIL/01 Message Sequence

Message Details

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

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/CALLBACK/FULFIL/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Previous private call call-back received at User 2		
Test Sequence	**Step**	**Type**	**Description**
	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

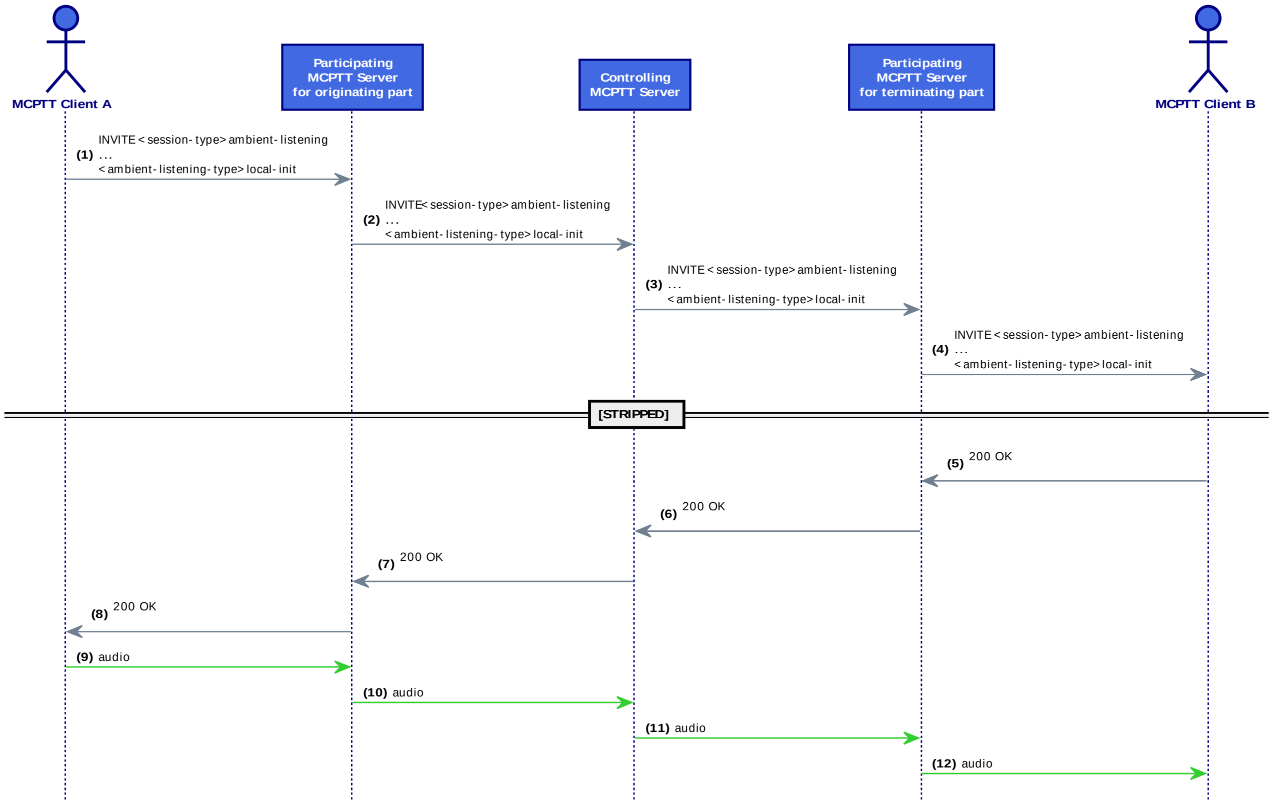

Figure 37: CONN-MCPTT/ONN/AMBIENT/ONDEM/LOCAL/01 Message Sequence

Message Details

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Trace Pending
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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)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])

Interoperability Test Description			
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
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

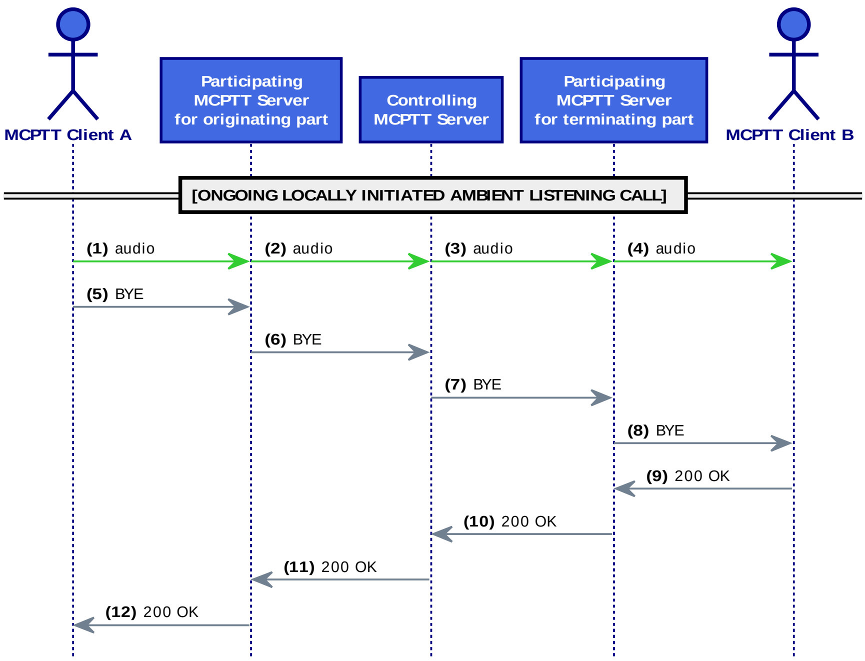

Figure 38: CONN-MCPTT/ONN/AMBIENT/ONDEM/LOCAL/02 Message Sequence

Message Details

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

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/AMBIENT/ONDEM/LOCAL/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the release of a locally initiated ambient listening call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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

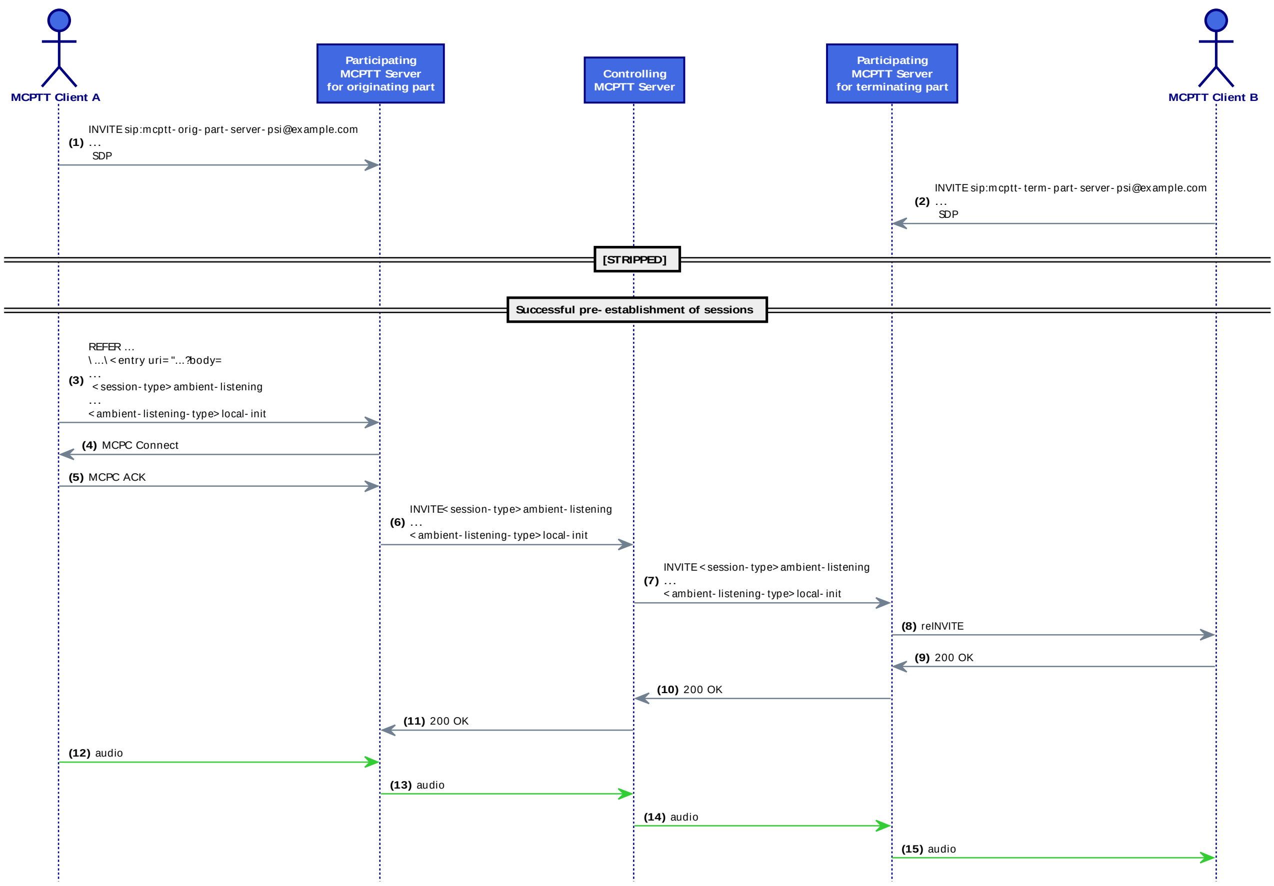

Figure 39: CONN-MCPTT/ONN/AMBIENT/PRE/LOCAL/01 Message Sequence

Message Details

`Trace Pending`

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

Interoperability Test Description	
Identifier	CONN-MCPTT/ONN/AMBIENT/PRE/LOCAL/01
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of locally initiated ambient listening call using preestablished sessions
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.8)
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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

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	Similary Client User 2 is notified with re-INVITE 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

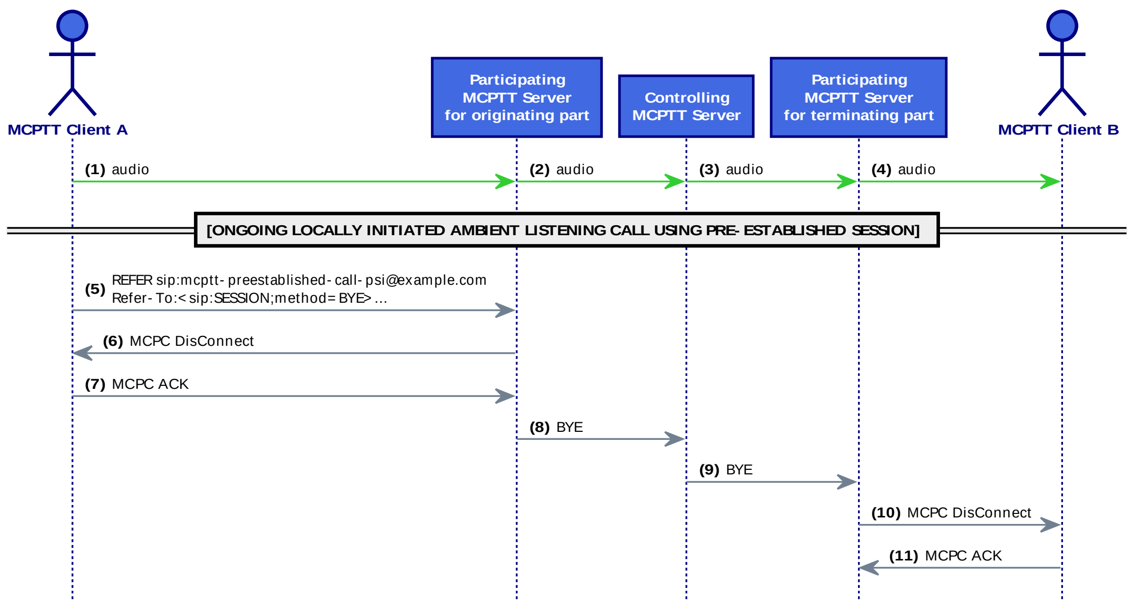

Figure 40: CONN-MCPTT/ONN/AMBIENT/PRE/LOCAL/02 Message Sequence

Message Details

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

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/AMBIENT/PRE/LOCAL/02		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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

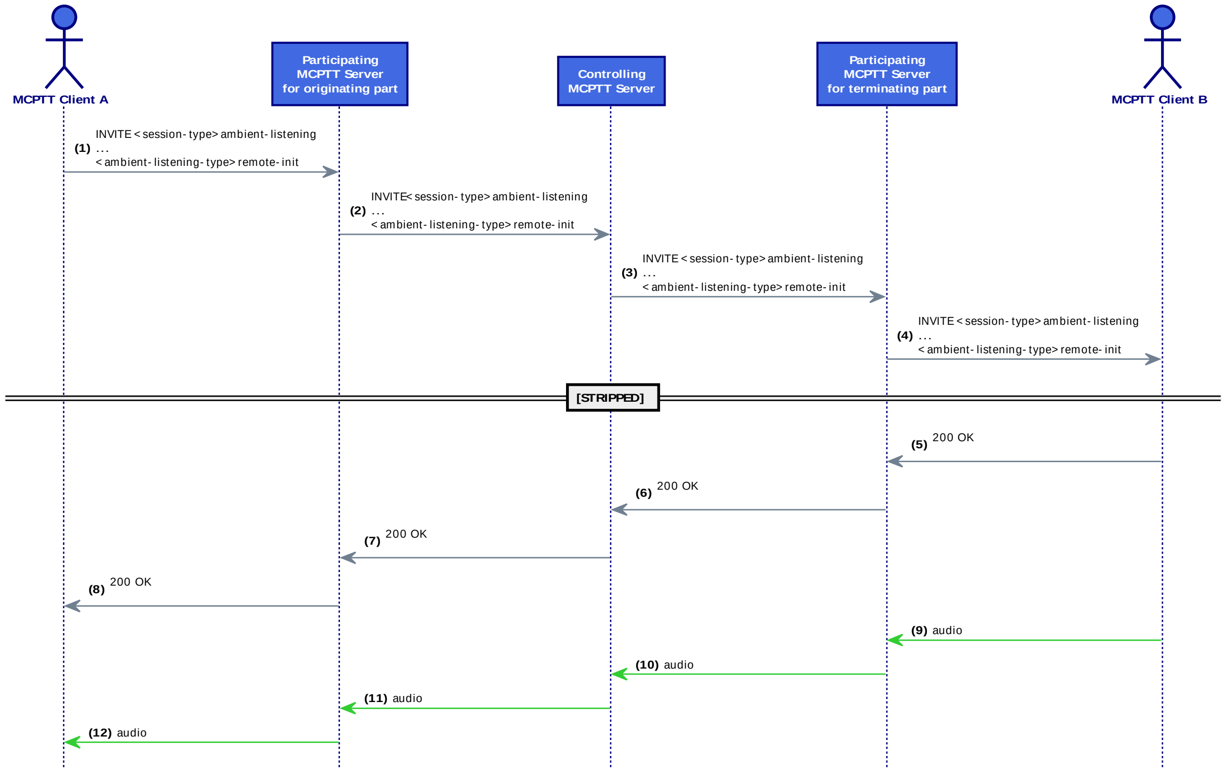

Figure 41: CONN-MCPTT/ONN/AMBIENT/ONDEM/REMOTE/01 Message Sequence

Message Details

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Trace Pending
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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)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14**,** MCPTT-Ctrl_AFFIL (clause 6.8)
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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

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

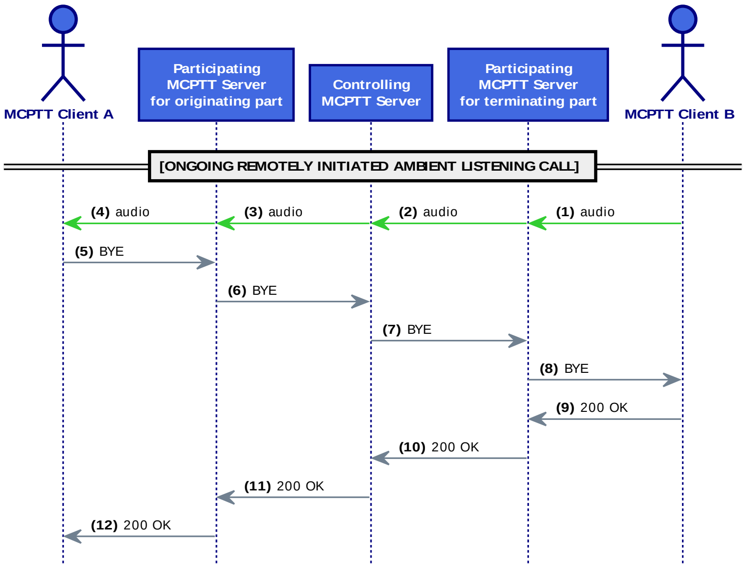

Figure 42: CONN-MCPTT/ONN/AMBIENT/ONDEM/REMOTE/02 Message Sequence

Message Details

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Trace Pending
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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)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])

Interoperability Test Description			
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14**,** MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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

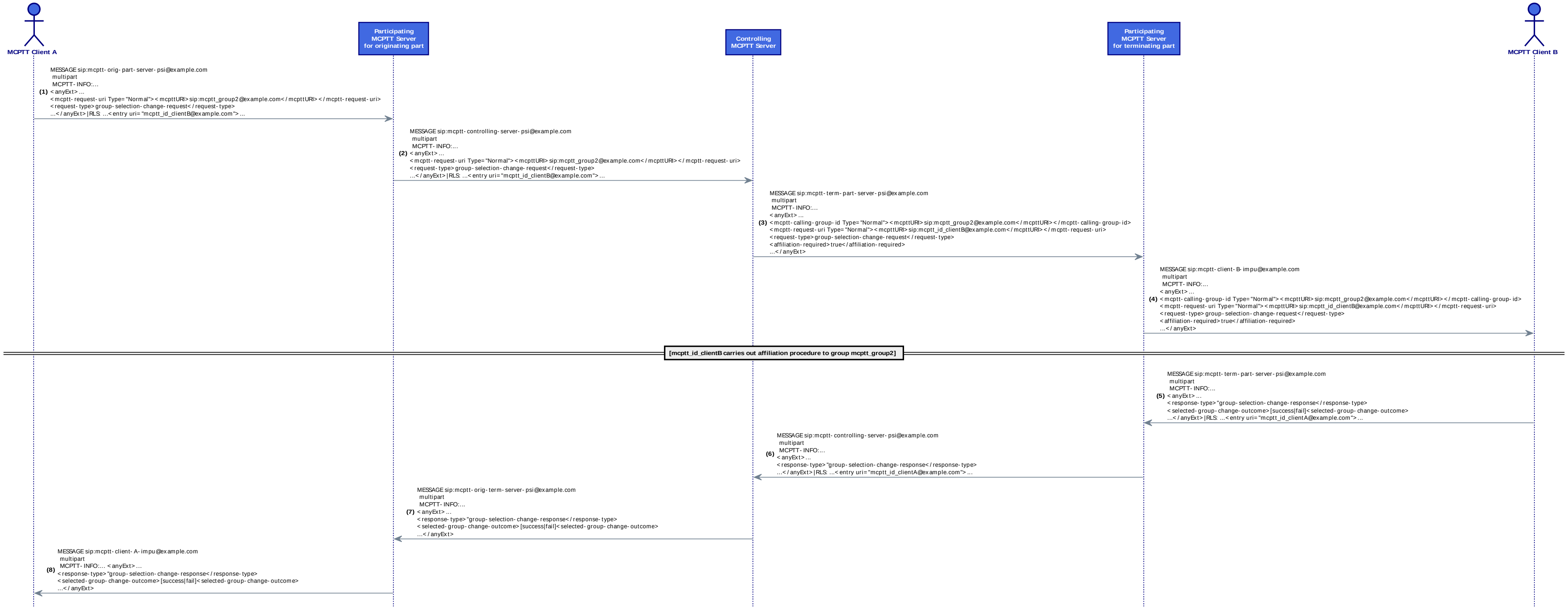

Figure 43: CONN-MCPTT/ONN/GROUPCHANGE/01 Message Sequence

Message Details

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Trace Pending
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Table 52: CONN-MCPTT/ONN/GROUPCHANGE/01 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/GROUPCHANGE/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the request to a targeted user to change affiliated group		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14**,** MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
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

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

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/O2O/STANDALONE/SDS/SIP/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to send a SDS o2o standalone message		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-SDS-SP (clause 6.2) • MCData-Part_ONN-MCData-SDS-SP, MCData-Part_AFFIL (clause 6.7) • MCData-Ctrl_ONN-MCData-SDS-SP, MCData-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcdata_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 MCData Client to another one with SIP signalling and MSRP using "SIP INVITE request for standalone SDS over media plane for originating participating MCData 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 MCData user media plane shall be transmitted by the MCData client to the participating MCData function. The participating MCData function shall forward the data to the controlling MCData function. The controlling MCData function shall distribute the data to the destination MCData client for one-to-one MCData service and to the MCData clients of the affiliated group members for group MCData service via the participating MCData functions serving each destination MCData client". "In the media plane the MCData client and the controlling MCData function shall act as MSRP clients. If and when a participating MCData function is in the communication path as a separate entity between the controlling MCData function and one or more MCData 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 MCData client and the originating participating MCData function, the originating participating MCData function and the controlling MCData function, the controlling MCData function and the terminating participating MCData function(s) and each terminating participating MCData function and the terminating MCData 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

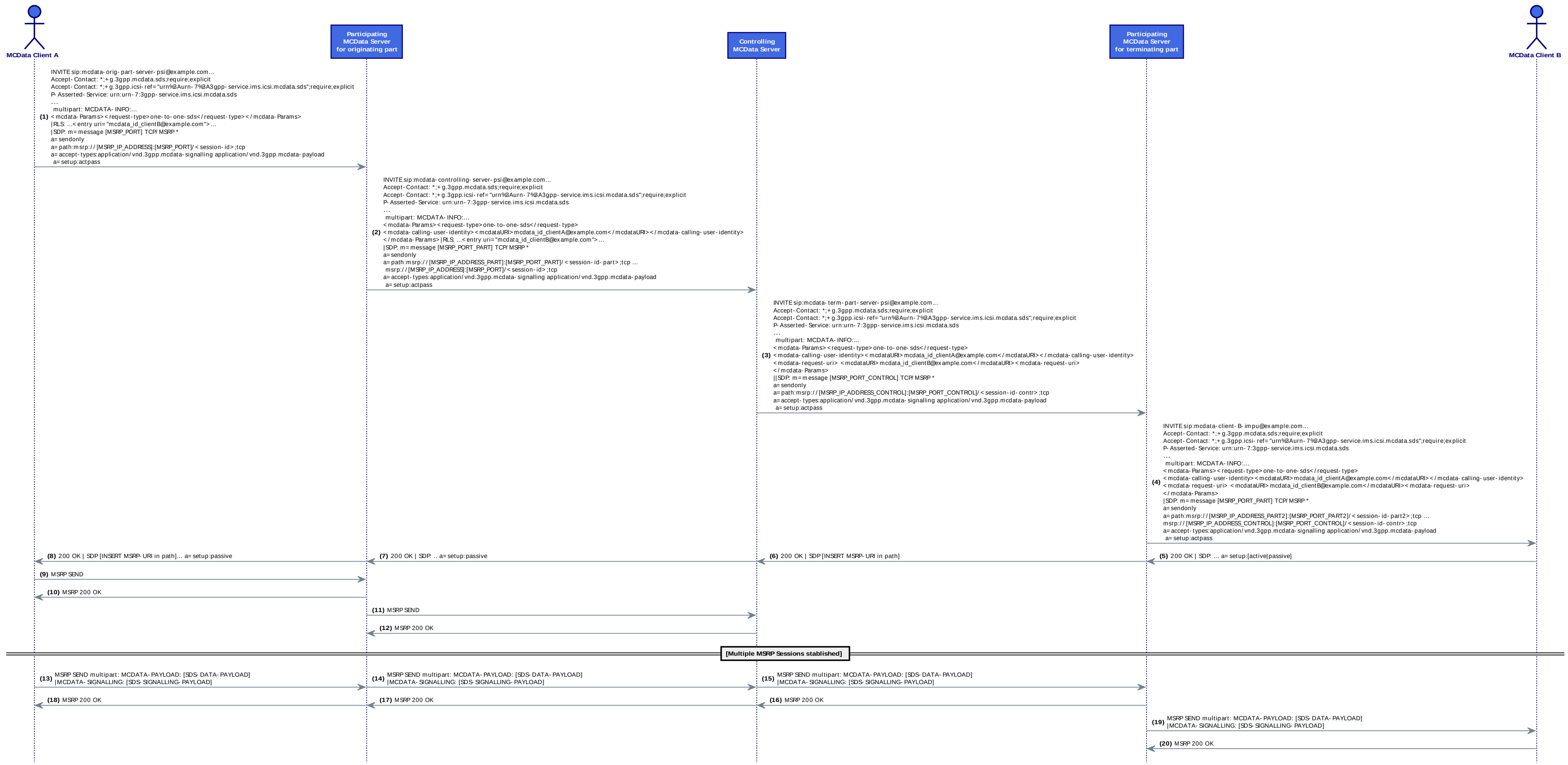

Figure 45: CONN-MCDATA/ONN/O2O/STANDALONE/SDS/MSRP/01 Message Sequence

Message Details

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

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/O2O/STANDALONE/SDS/MSRP/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to send a SDS o2o standalone message		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-SDS-MP (clause 6.2) • MCData-Part_ONN-MCData-SDS-MP, MCData-Part_AFFIL (clause 6.7) • MCData-Ctrl_ONN-MCData-SDS-MP, MCData-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcdata_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 stablished and associated MSRP information exchanged
	6	verify	SDS o2o standalone message sent to User 2 mcdata_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

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

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/O2O/SESSION/SDS/MSRP/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to send a SDS o2o session		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-SDS-MP (clause 6.2) • MCData-Part_ONN-MCData-SDS-MP, MCData-Part_AFFIL (clause 6.7) • MCData-Ctrl_ONN-MCData-SDS-MP, MCData-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcdata_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 stablished and associated MSRP information exchanged
	6	verify	Exchange of SDS messages over the stablished 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 <mcdatarequest-uri> element in the mcdata-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

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

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/SIP/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to send a SDS group standalone message		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-SDS-SP (clause 6.2) • MCData-Part_ONN-MCData-SDS-SP, MCData-Part_AFFIL (clause 6.7) • MCData-Ctrl_ONN-MCData-SDS-SP, MCData-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcdata_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 mcdata_id_clientB@example.com and User 3 mcdata_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 <mcdatarequest-uri> element in the mcdata-info will be set to the group identity. Therefore the MCData 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 MCData 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

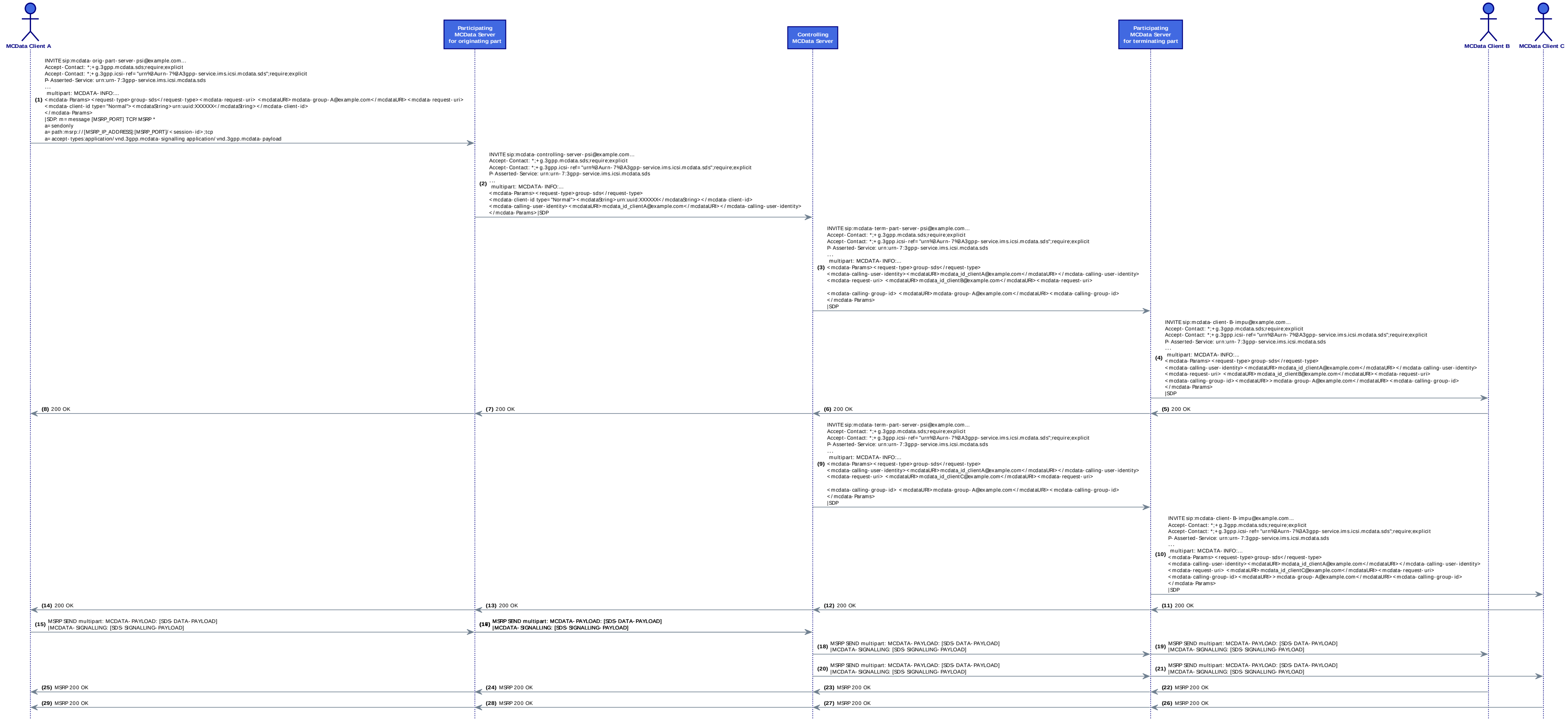

Figure 48: CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/MSRP/01 Message Sequence

Message Details

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

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/MSRP/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to send a SDS group standalone message</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCData-Client_ONN-MCData-SDS-MP (clause 6.2)
• MCData-Part_ONN-MCData-SDS-MP, MCData-Part_AFFIL (clause 6.7)
• MCData-Ctrl_ONN-MCData-SDS-MP, MCData-Ctrl_AFFIL (clause 6.8)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• 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
• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="7">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>User 1 (mcdata_id_clientA@example.com) sends an INVITE with MSRP information in the SDP</td></tr>
<tr><td>2</td><td>check</td><td>SIP INVITE arrives at originating participating</td></tr>
<tr><td>3</td><td>check</td><td>SIP INVITE forwarded from the originating to the controlling</td></tr>
<tr><td>4</td><td>check</td><td>SIP INVITE forwarded from the controlling to the terminating and from there to User 2 and User 3</td></tr>
<tr><td>5</td><td>check</td><td>SIP session stablished and associated MSRP information exchanged among all ends</td></tr>
<tr><td>6</td><td>verify</td><td>SDS group standalone message sent to User 2 and User 3 (mcdata_id_client[B-C]@example.com) over MSRP</td></tr>
</table>

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

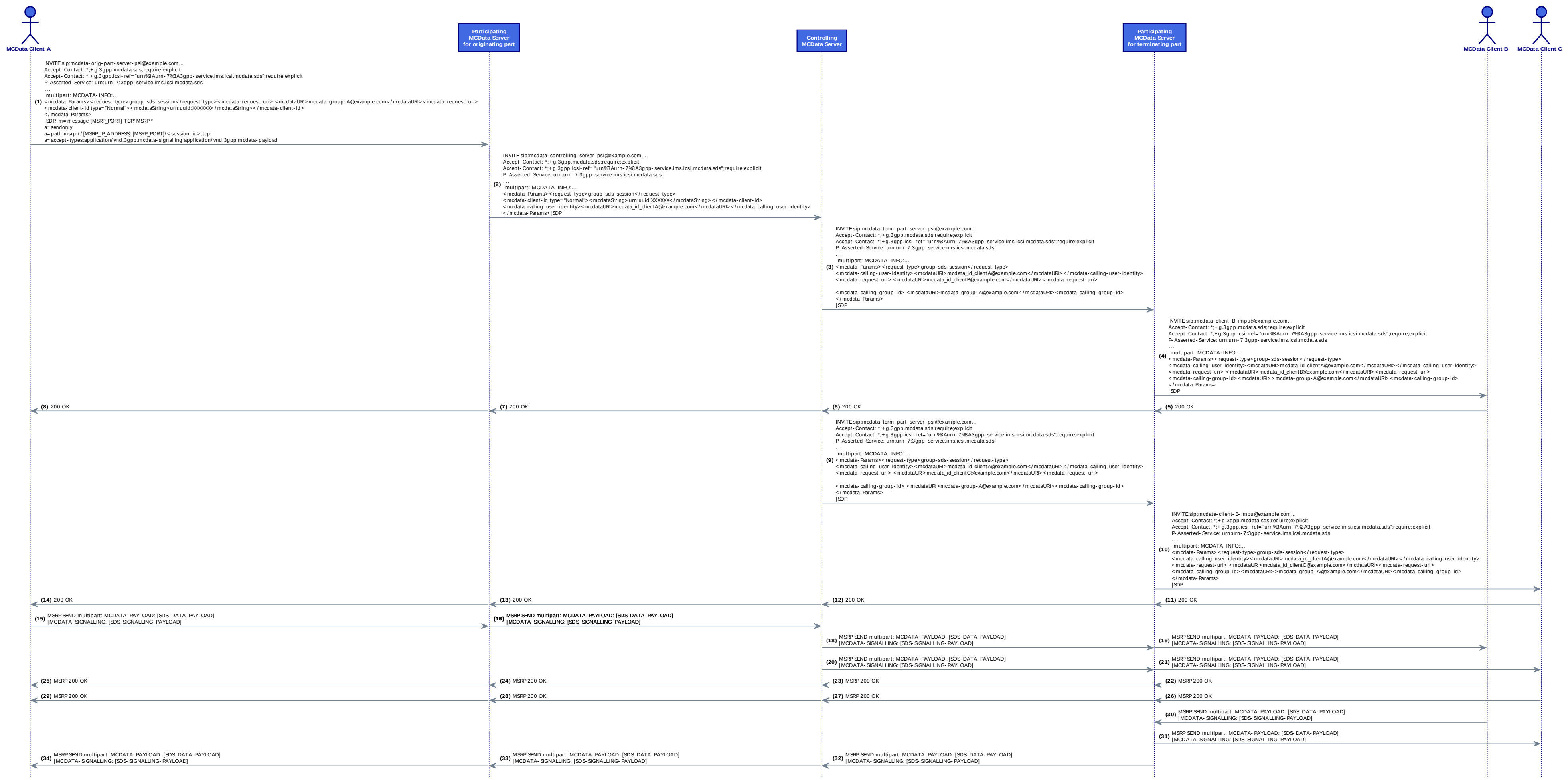

Figure 49: CONN-MCDATA/ONN/GROUP/SESSION/SDS/MSRP/01 Message Sequence

Message Details

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

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/GROUP/SESSION/SDS/MSRP/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to establish a SDS group session using MSRP and exchange messages		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-SDS-MP (clause 6.2) • MCData-Part_ONN-MCData-SDS-MP, MCData-Part_AFFIL (clause 6.7) • MCData-Ctrl_ONN-MCData-SDS-MP, MCData-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcdata_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 stablished and associated MSRP information exchanged
	6	verify	Exchange of SDS messages over the stablished 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 mcdata-info part with the type of request ('one-to-one-fd'), a resource-lists part with the MCData ID of the receiver and a mcdata-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

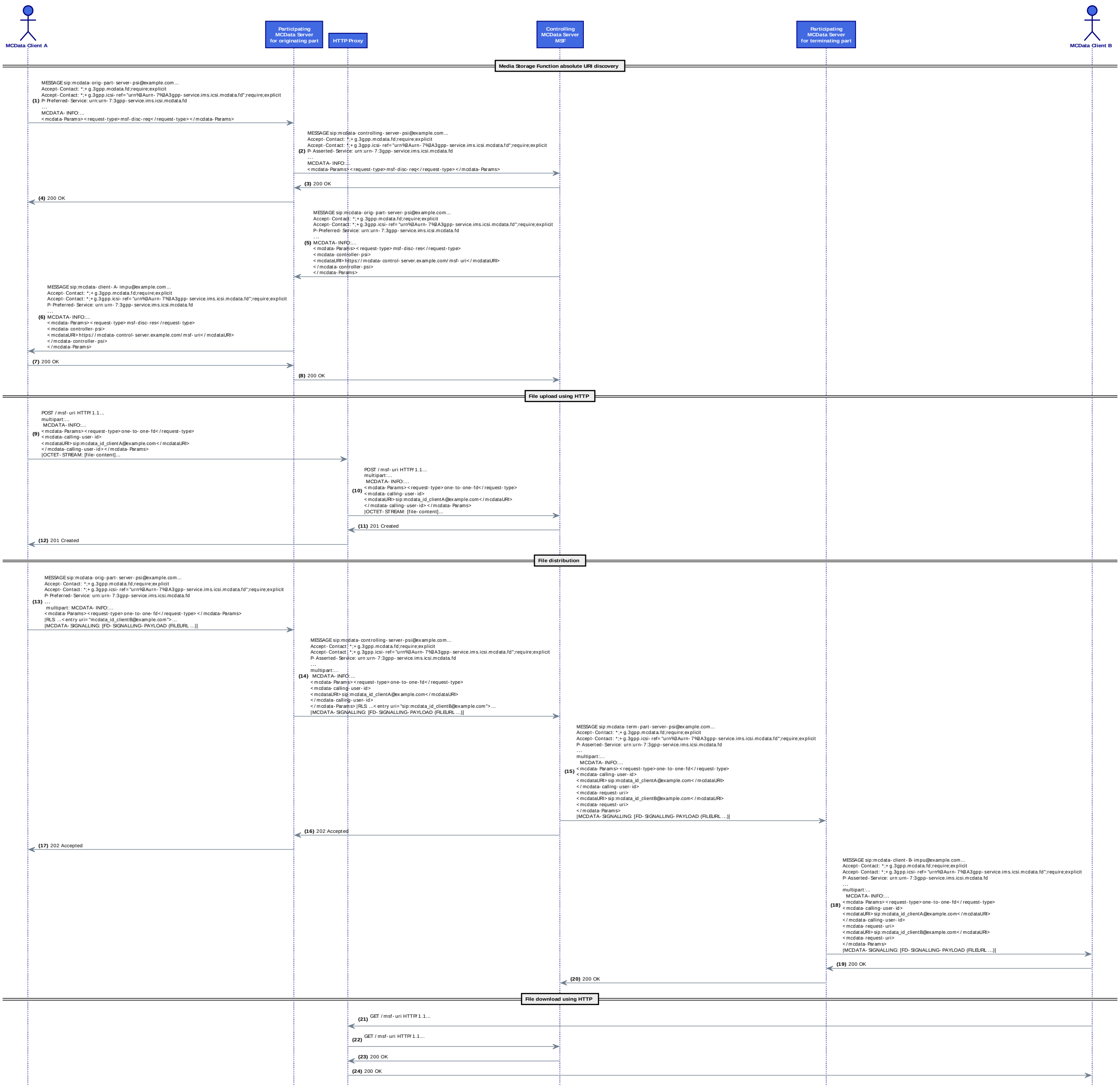

Figure 50: CONN-MCDATA/ONN/O2O/FD/HTTP/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/O2O/FD/HTTP/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and HTTP file distribution		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • HTTP (see IETF RFC 7230 [38]) • TLS (see IETF RFC 8446 [39]) • SSL (see IETF RFC 6101 [40])		
Applicability	• MCData-Client_ONN-MCData-FD-SP (clause 6.2) • MCData-Part_ONN-MCData-FD-SP (clause 6.9) • MCData-Ctrl_ONN-MCData-FD-SP (clause 6.10)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	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 orig. 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 orig. MCData participating server
	8	check	MESSAGE received at the first MCData client
	9	check	MCData 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	MCData client sends an invitation for downloading the file to the other user with a SIP MESSAGE
	12	check	MESSAGE received at the orig. MCData 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 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 term. participating function to the terminating Client User 2 is notified
	17	stimulus	User 2 wants to download the file
	18	check	MCData 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

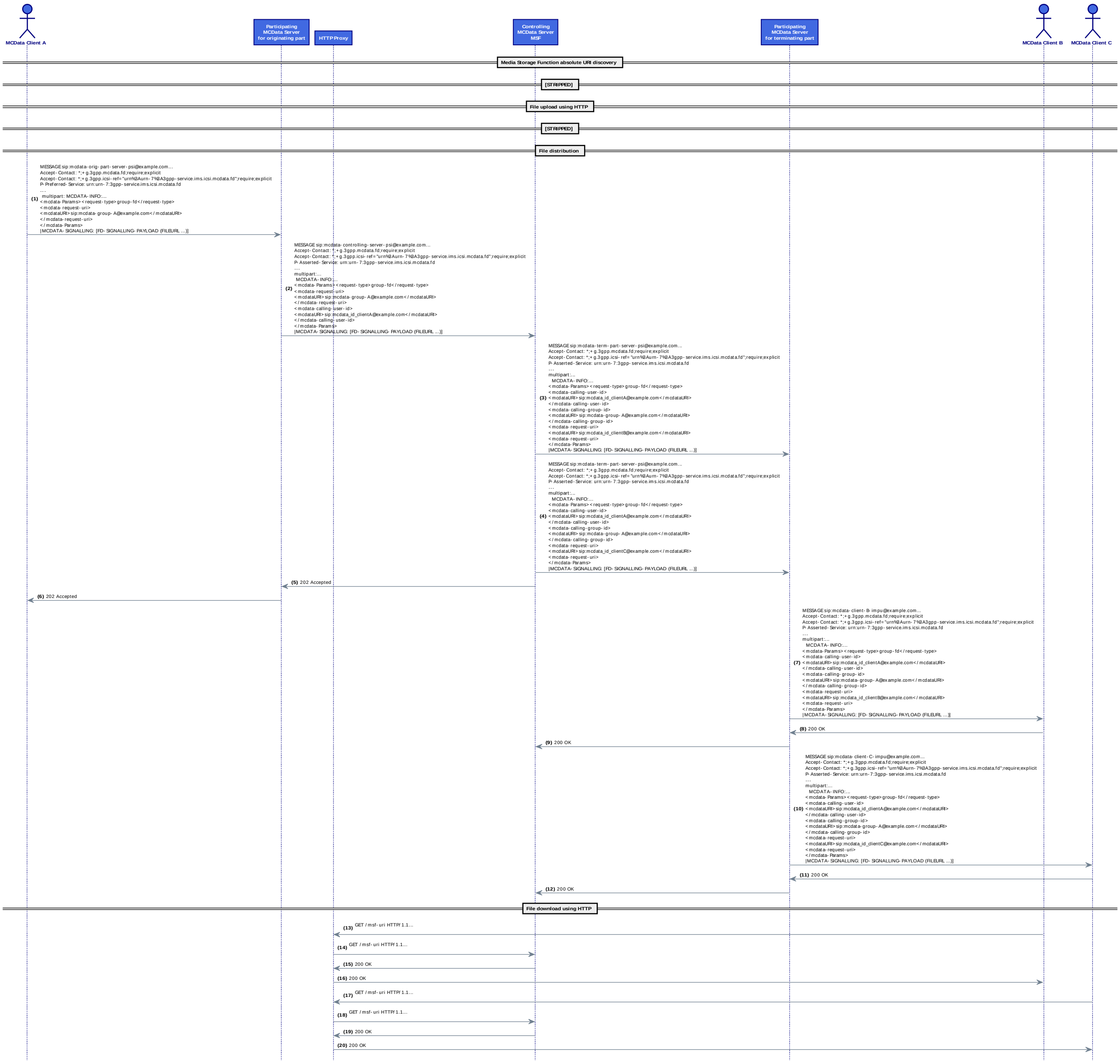

Figure 51: CONN-MCDATA/ONN/GROUP/FD/HTTP/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/GROUP/FD/HTTP/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and HTTP file distribution		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • HTTP (see IETF RFC 7230 [38]) • TLS (see IETF RFC 8446 [39]) • SSL (see IETF RFC 6101 [40])		
Applicability	• MCData-Client_ONN-MCData-FD-SP (clause 6.2) • MCData-Part_ONN-MCData-FD-SP, MCData-Part_AFFIL (clause 6.9) • MCData-Ctrl_ONN-MCData-FD-SP, MCData-Ctrl_GMS (clause 6.10)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcdata_id_clientA@example.com) wants to send a file to mcdata-group-A@example.com
	2	check	MCData client tries to discover the absolute URI for the file
	3	check	MESSAGE received at the orig. 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 group 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, 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

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

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Trace Pending
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Interoperability Test Description

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

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">CONN-MCDATA/ONN/O2O/FD/MSRP/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and file transfer using MSRP</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MSRP (see IETF RFC 4975 [41] and IETF RFC 6135 [33])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCData-Client_ONN-MCData-FD-MP (clause 6.2)
• MCData-Part_ONN-MCData-FD-MP (clause 6.9)
• MCData-Ctrl_ONN-MCData-FD-MP (clause 6.10)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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
• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="8">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>User 1 (mcdata_id_clientA@example.com) wants to send a file to User 2 (mc-data_id_clientB@example.com)</td></tr>
<tr><td>2</td><td>check</td><td>Dialog creating INVITE received at the MCData participating server of User 1</td></tr>
<tr><td>3</td><td>check</td><td>The participating server adapts the mcdata-info accordingly and creates an INVITE to the controlling server</td></tr>
<tr><td>4</td><td>check</td><td>The controlling server checks permissions and forwards the INVITE to the participating server of the callee</td></tr>
<tr><td>5</td><td>check</td><td>Upon arrival of the INVITE adapted by the terminating participating function to the terminating Client User 2 is notified</td></tr>
<tr><td>6</td><td>check</td><td>User 2 accepts the file transfer and all the signalling is completed</td></tr>
<tr><td>7</td><td>verify</td><td>Call connected and media flows (MSRP) exchanged</td></tr>
</table>

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

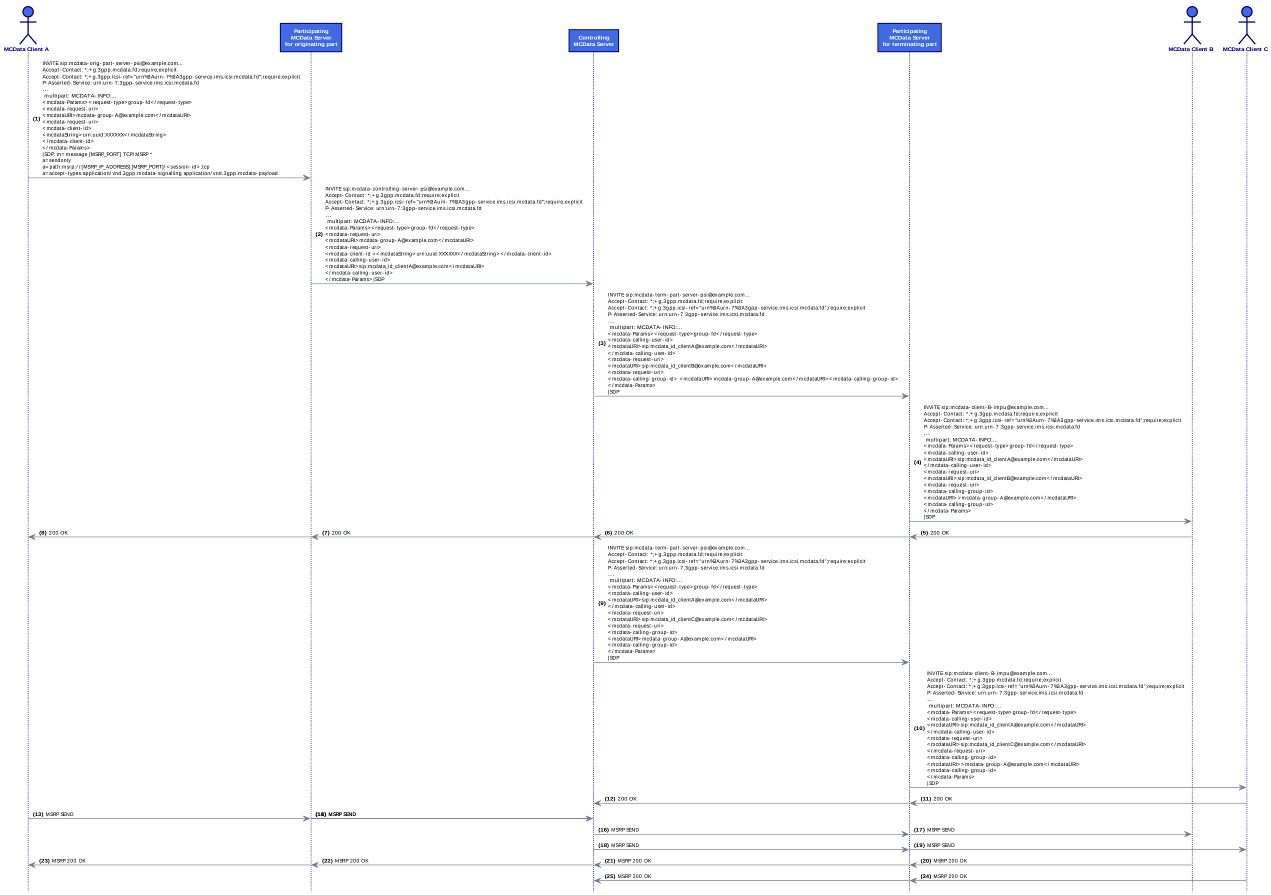

Figure 53: CONN-MCDATA/ONN/GROUP/FD/MSRP/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

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

Interoperability Test Description	
Identifier	CONN-MCDATA/ONN/GROUP/FD/MSRP/01
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and file transfer using MSRP
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MSRP (see IETF RFC 4975 [41] and IETF RFC 6135 [33])
Applicability	• MCData-Client_ONN-MCData-FD-MP (clause 6.2) • MCData-Part_ONN-MCData-FD-MP, MCData-Part_AFFIL (clause 6.9) • MCData-Ctrl_ONN-MCData-FD-MP, MCData-Ctrl_GMS (clause 6.10)
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id

Interoperability Test Description			
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcdata_id_clientA@example.com) wants to send a file to mcdata-group-A@example.com
	2	check	Dialog creating INVITE received at the MCData 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, 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, see 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 mcdata-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 mcdata 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

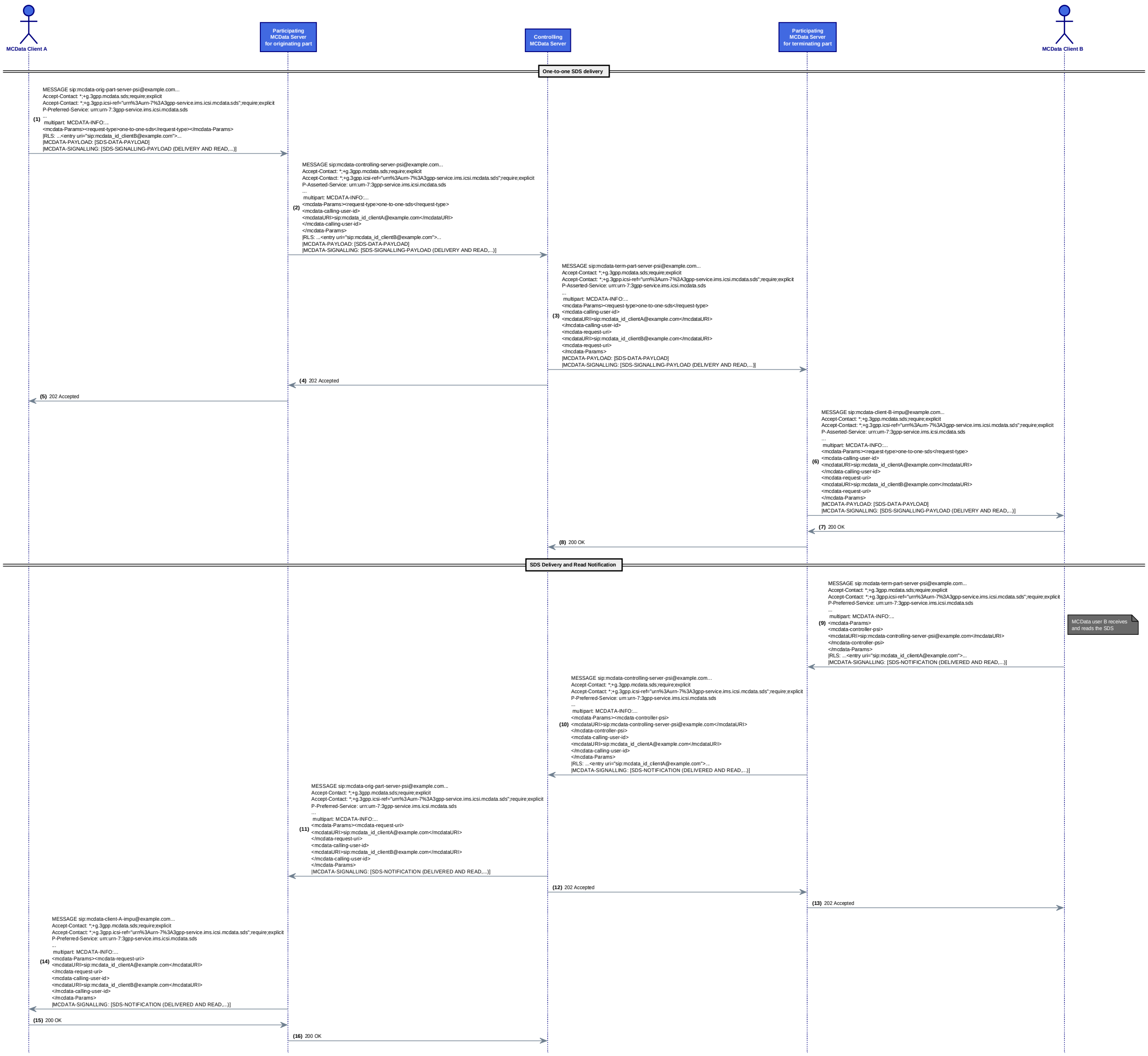

Figure 54: CONN-MCDATA/ONN/DISNOT/SDS/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/DISNOT/SDS/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to send a SDS o2o standalone message and SDS notification		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-SDS-SP (clause 6.2) • MCData-Part_ONN-MCData-SDS-SP, MCData-Part_AFFIL (clause 6.7) • MCData-Ctrl_ONN-MCData-SDS-SP, MCData-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcdata_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	MCData 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 MCData 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			
Identifier	CONN-MCDATA/ONN/DISNOT/SDS/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to send a group SDS standalone message and SDS notification		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-SDS-SP (clause 6.2) • MCData-Part_ONN-MCData-SDS-SP, MCData-Part_AFFIL (clause 6.7) • MCData-Ctrl_ONN-MCData-SDS-SP, MCData-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcdata_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	MCData 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 MCData 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 mcdata-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 mcdata-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

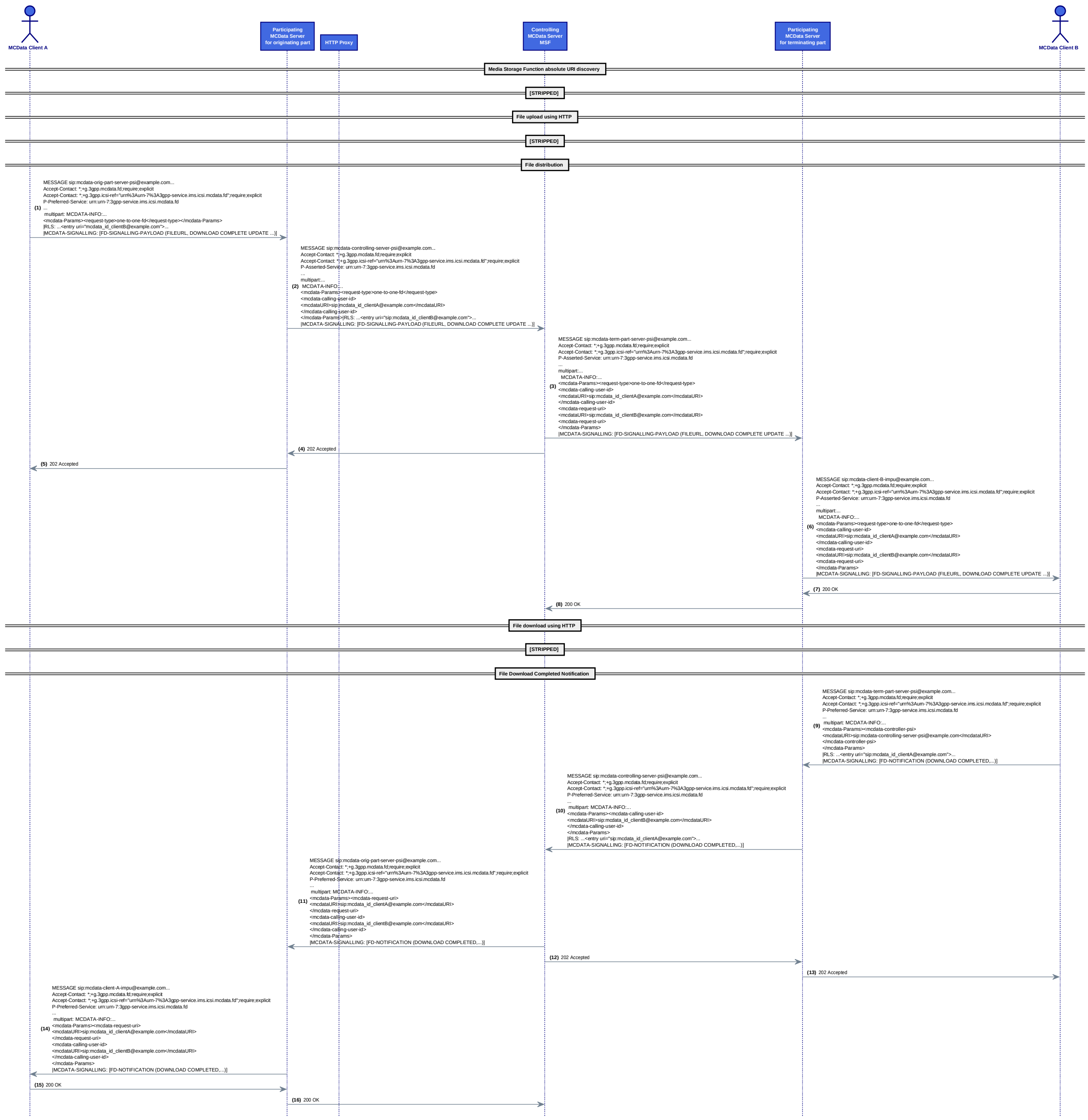

Figure 56: CONN-MCDATA/ONN/DISNOT/FD/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/DISNOT/FD/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, HTTP based FD and FD disposition notification		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • HTTP (see IETF RFC 7230 [38]) • TLS (see IETF RFC 8446 [39]) • SSL (see IETF RFC 6101 [40])		
Applicability	• MCData-Client_ONN-MCData-FD-SP (clause 6.2) • MCData-Part_ONN-MCData-FD-SP (clause 6.9) • MCData-Ctrl_ONN-MCData-FD-SP (clause 6.10)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	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

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Trace Pending
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Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCDATA/DISNOT/FD/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, HTTP based FD and FD disposition notification		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • HTTP (see IETF RFC 7230 [38]) • TLS (see IETF RFC 8446 [39]) • SSL (see IETF RFC 6101 [40])		
Applicability	• MCData-Client_ONN-MCData-FD-SP (clause 6.2) • MCData-Part_ONN-MCData-FD-SP, MCData-Part_AFFIL (clause 6.9) • MCData-Ctrl_ONN-MCData-FD-SP, MCData-Ctrl_GMS (clause 6.10)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcdata_id_clientA@example.com) wants to send a file to mcdata-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 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 group 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, 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

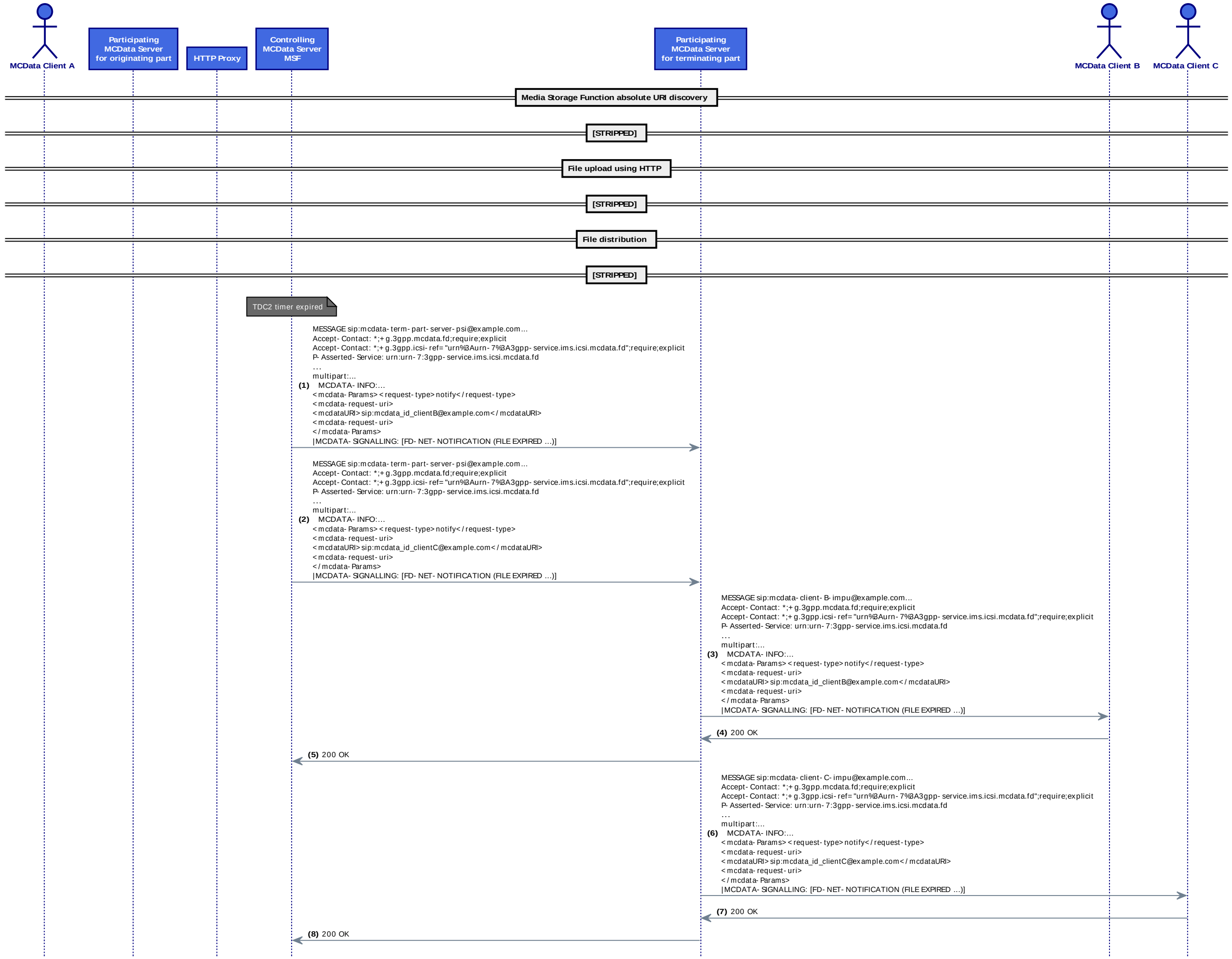

Figure 58: CONN-MCDATA/NET/FD/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

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

<table>
<tr><th colspan="5">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="4">CONN-MCDATA/NET/FD/01</td></tr>
<tr><td>Test Objective</td><td colspan="4">Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling</td></tr>
<tr><td>Configuration(s)</td><td colspan="4">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="4">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• HTTP (see IETF RFC 7230 [38])
• TLS (see IETF RFC 8446 [39])
• SSL (see IETF RFC 6101 [40])</td></tr>
<tr><td>Applicability</td><td colspan="4">• MCData-Client_ONN-MCData-FD-SP (clause 6.2)
• MCData-Part_ONN-MCData-FD-SP (clause 6.9)
• MCData-Ctrl_ONN-MCData-FD-SP (clause 6.10)</td></tr>
<tr><td colspan="5"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="4">• IP connectivity among all elements of the specific scenario
• 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
• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id
• Client A has already uploaded a file using HTTP</td></tr>
<tr><td colspan="5"></td></tr>
<tr><td rowspan="7">Test Sequence</td><td>Step</td><td>Type</td><td colspan="2">Description</td></tr>
<tr><td>1</td><td>stimulus</td><td colspan="2">File availability timer TDC2 expires in controlling server</td></tr>
<tr><td>2</td><td>check</td><td colspan="2">Controlling server identifies MCData clients which have not downloaded the file</td></tr>
<tr><td>3</td><td>check</td><td colspan="2">Controlling server sends a SIP MESSAGE to the participating server of each MCData client</td></tr>
<tr><td>4</td><td>check</td><td colspan="2">SIP MESSAGE contains a 'file expired' network notification</td></tr>
<tr><td>5</td><td>check</td><td colspan="2">Participating server forwards SIP MESSAGE to MCData client</td></tr>
<tr><td>6</td><td>check</td><td colspan="2">MCData client processes the file expired notification</td></tr>
</table>

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 [7]).

Message Sequence Diagram

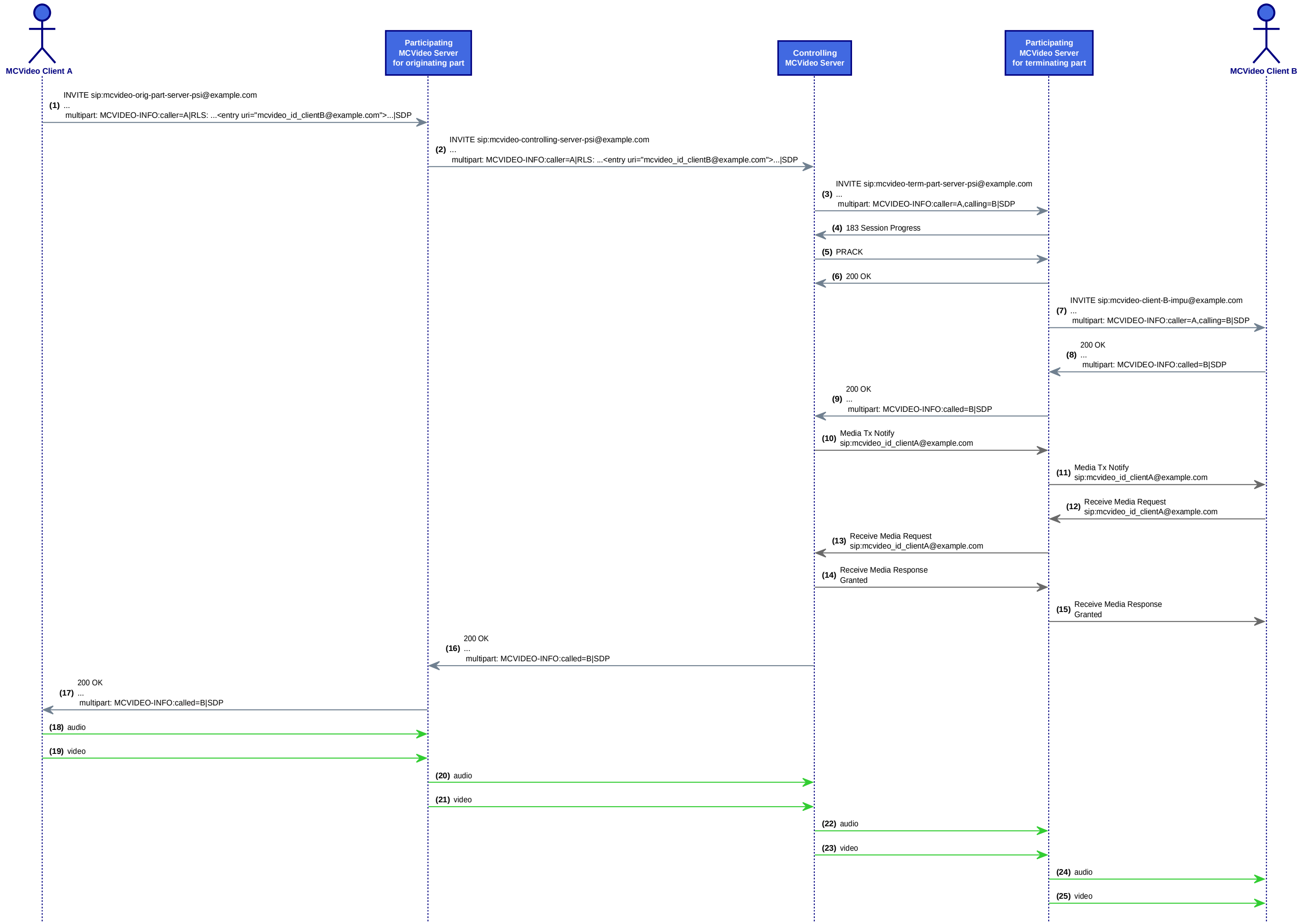

Figure 59: CONN-MCVIDEO/ONN/PRIV/AUTO/ONDEM/WTC/NTC/01 Message Sequence

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%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>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			
Identifier	CONN-MCVIDEO/ONN/PRIV/AUTO/ONDEM/WTC/NTC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with automatic commencement mode		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system.		
Test Sequence	**Step**	**Type**	**Description**
	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

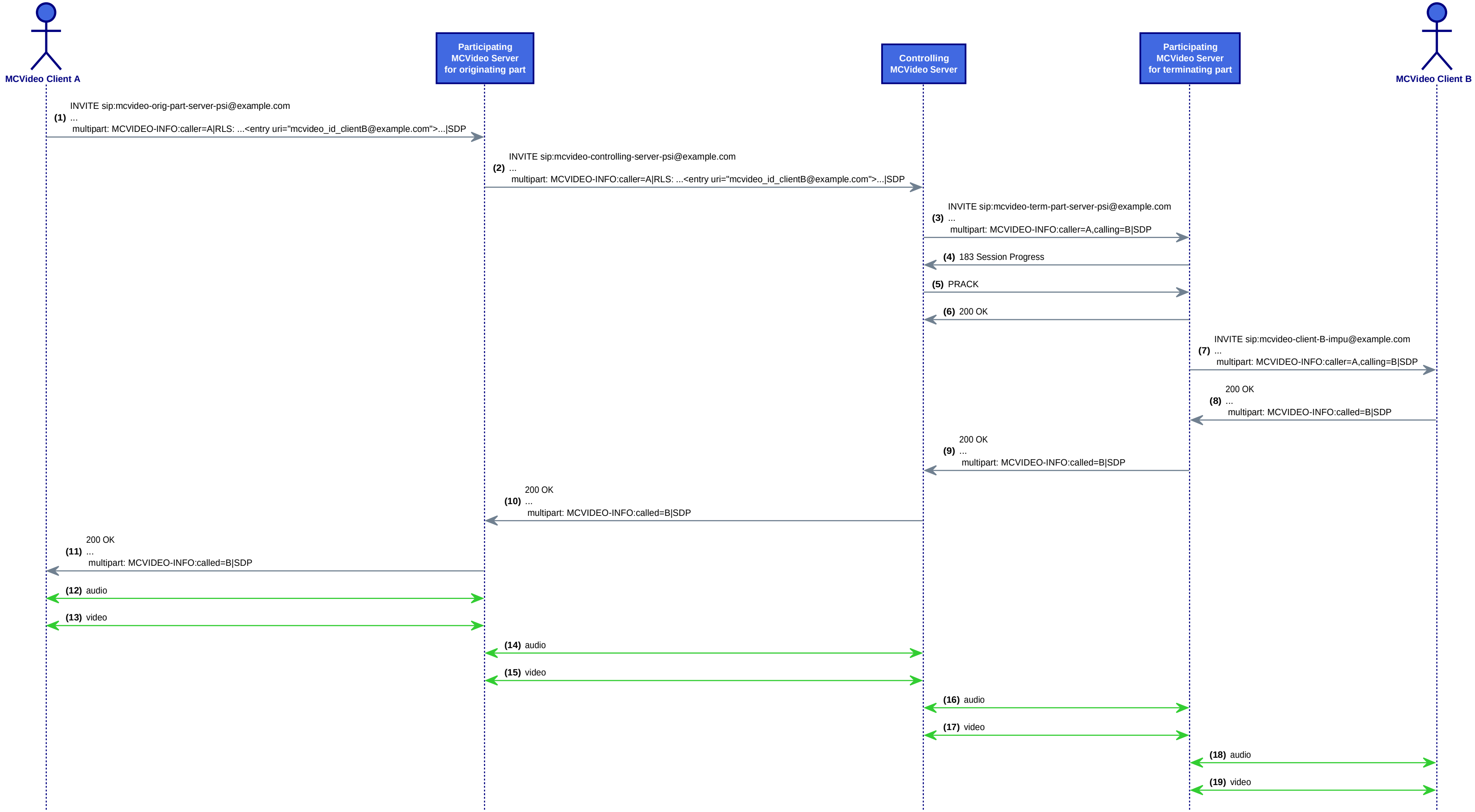

Figure 60: CONN-MCVIDEO/ONN/PRIV/AUTO/ONDEM/WOTC/01 Message Sequence

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%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>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			
Identifier	CONN-MCVIDEO/ONN/PRIV/AUTO/ONDEM/WOTC /01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call without transmission control with automatic commencement mode		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system.		
Test Sequence	**Step**	**Type**	**Description**
	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

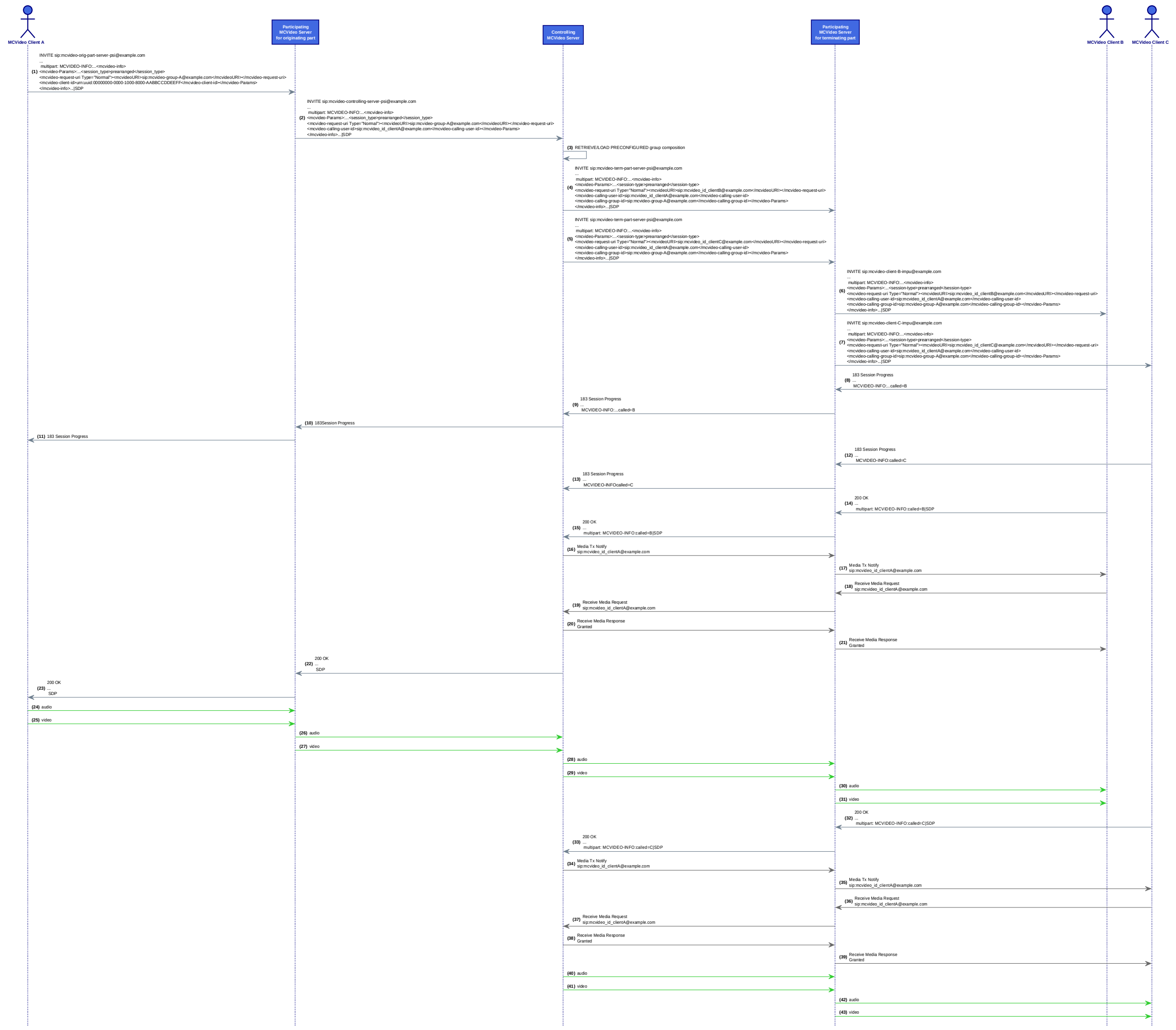

Figure 61: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/01 Message Sequence

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%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>
    </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			
Identifier	CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	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

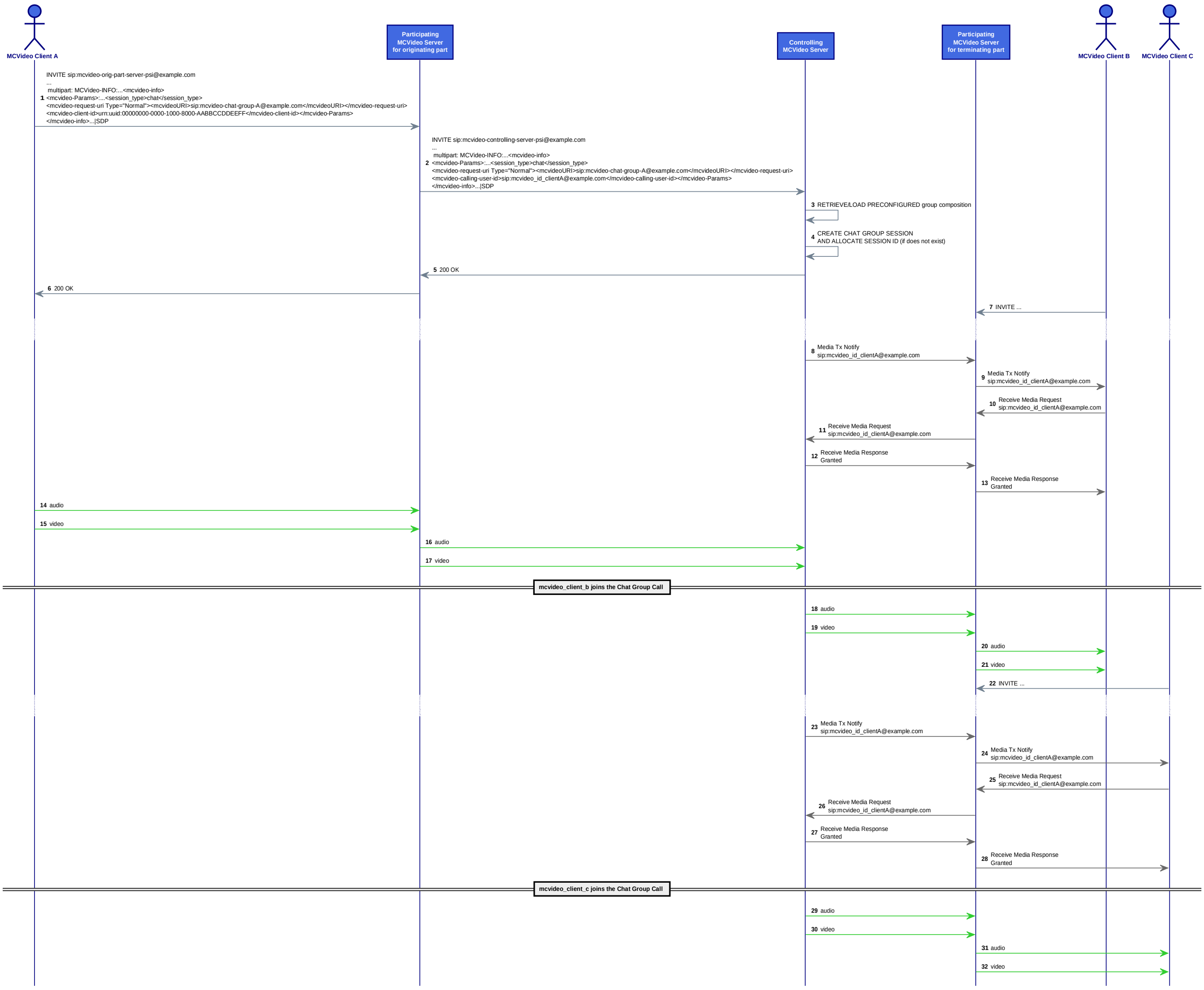

Figure 62: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/01 Message Sequence

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%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>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			
Identifier	CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of an on demand MCVideo Chat Group Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system and users properly affiliated to the called chat group		
Test Sequence	**Step**	**Type**	**Description**
	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

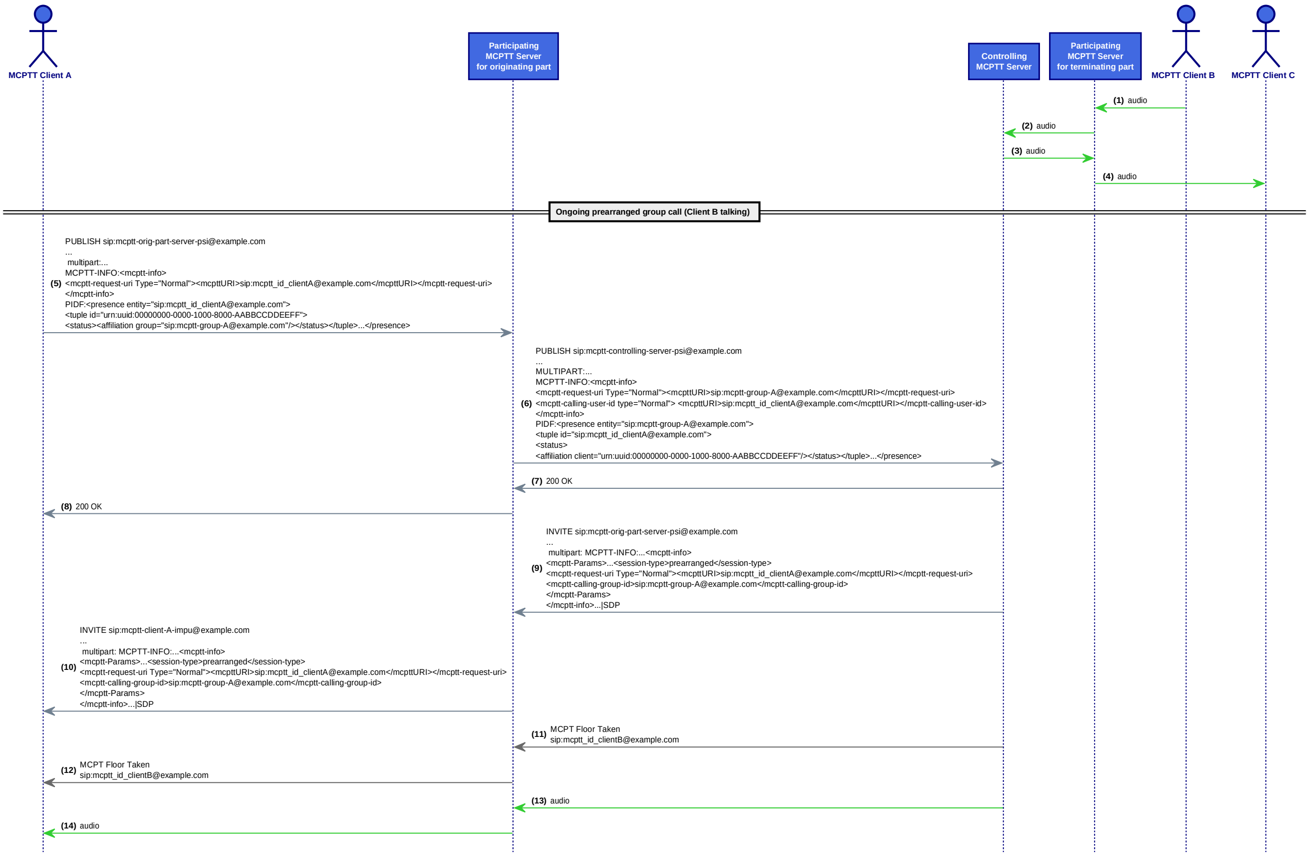

Figure 62a: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/07 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/07		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity - among all elements of the specific scenario • 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 • An on demand prearranged group call is ongoing		
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	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
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 9.2.2.2.11 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 entrying 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

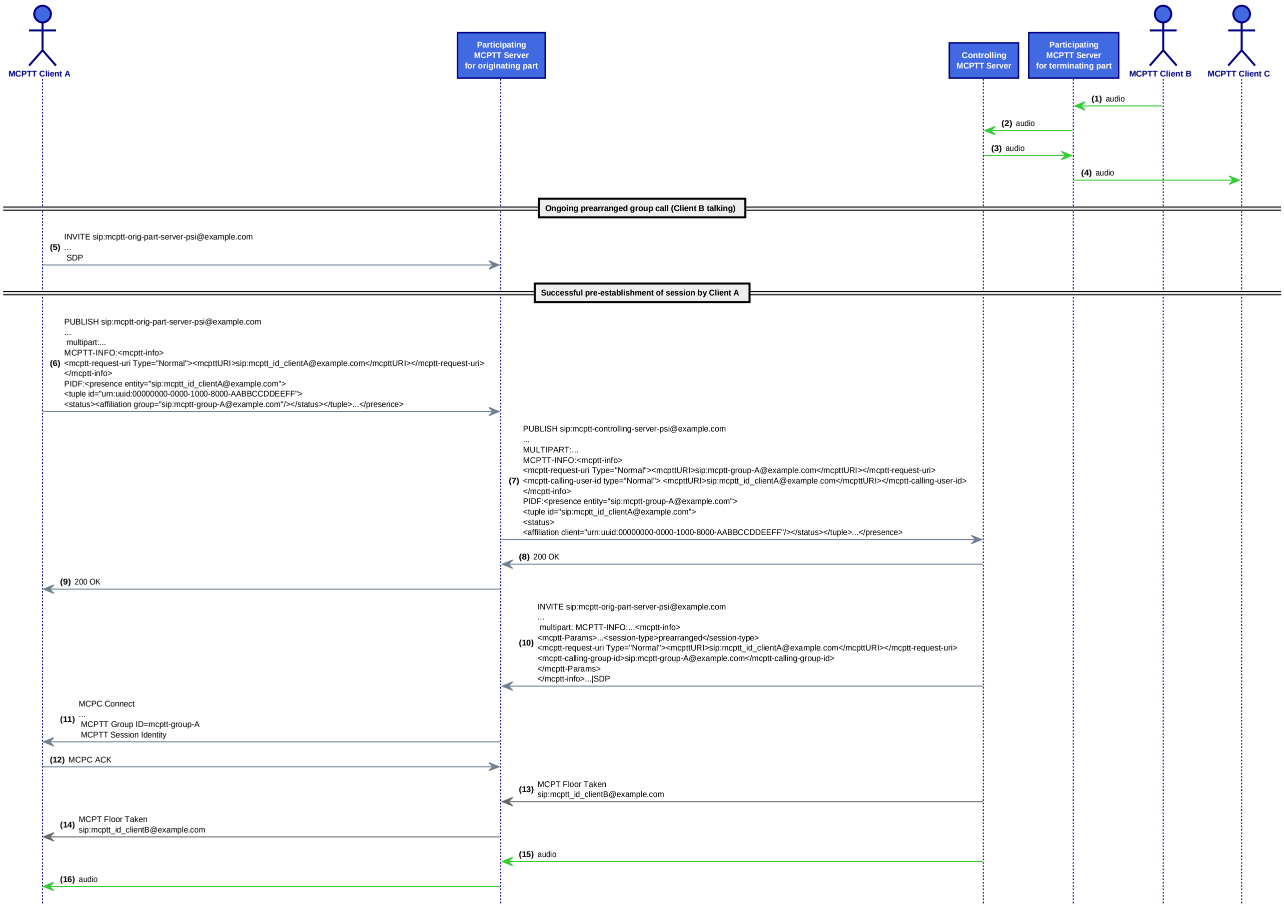

Figure 62b: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/03 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

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

Interoperability Test Description	
Identifier	CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/03
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)

Interoperability Test Description			
Pre-test conditions	• IP connectivity - among all elements of the specific scenario • 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 • An on demand prearranged group call is ongoing and the User 1 has a pre-established session		
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
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 9.2.2.2.11 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

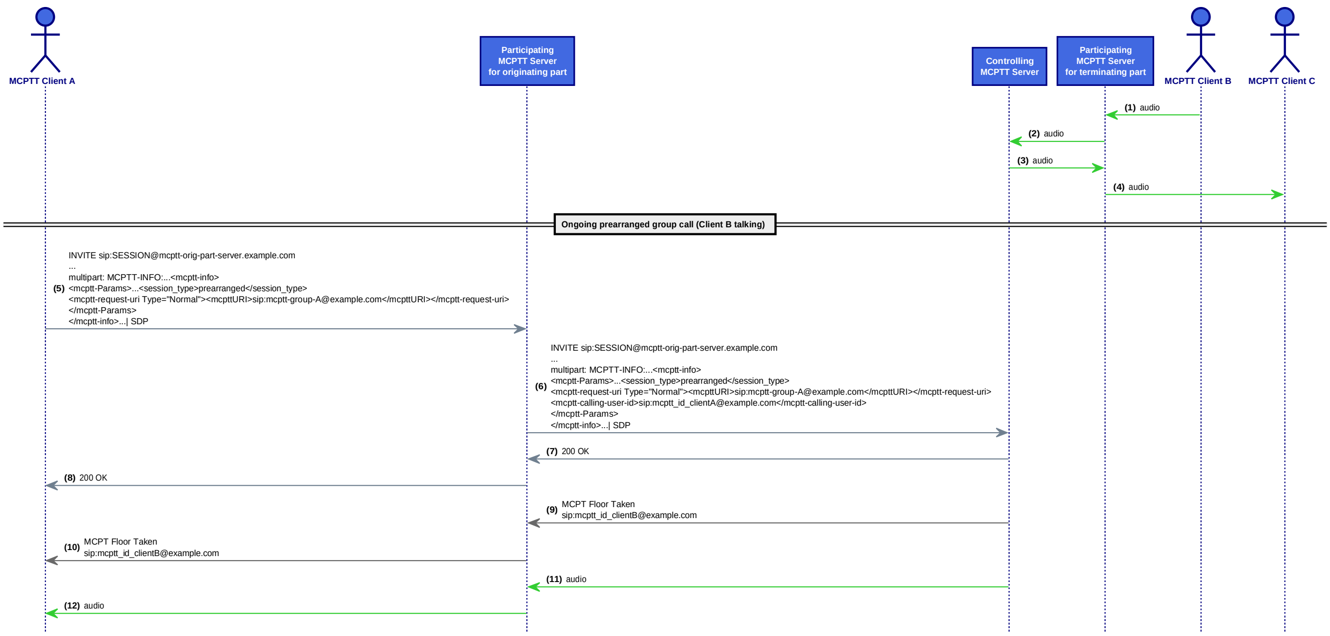

Figure 62c: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/07 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/07		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity - among all elements of the specific scenario • 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 • An on demand prearranged group call is ongoing		
Test Sequence	**Step**	**Type**	**Description**
	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
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 9.2.2.2.11 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

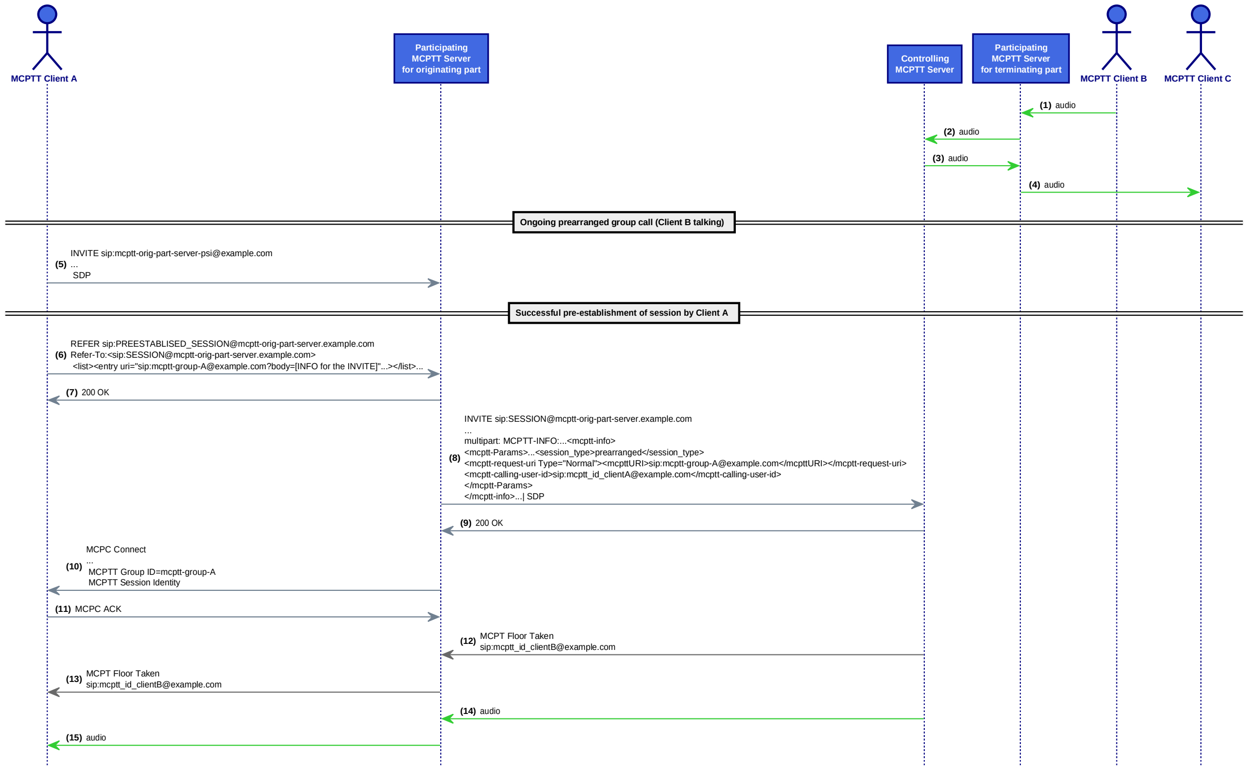

Figure 62d: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/04 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

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

Interoperability Test Description	
Identifier	CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/04
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)
Pre-test conditions	• IP connectivity - among all elements of the specific scenario • 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 • An on demand prearranged group call is ongoing and the User 1 has a pre-established session

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 9.2.2.2.11 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: An on-demand chat group call has been chosen to show the subscription mechanism in this test case.

Message Sequence Diagram

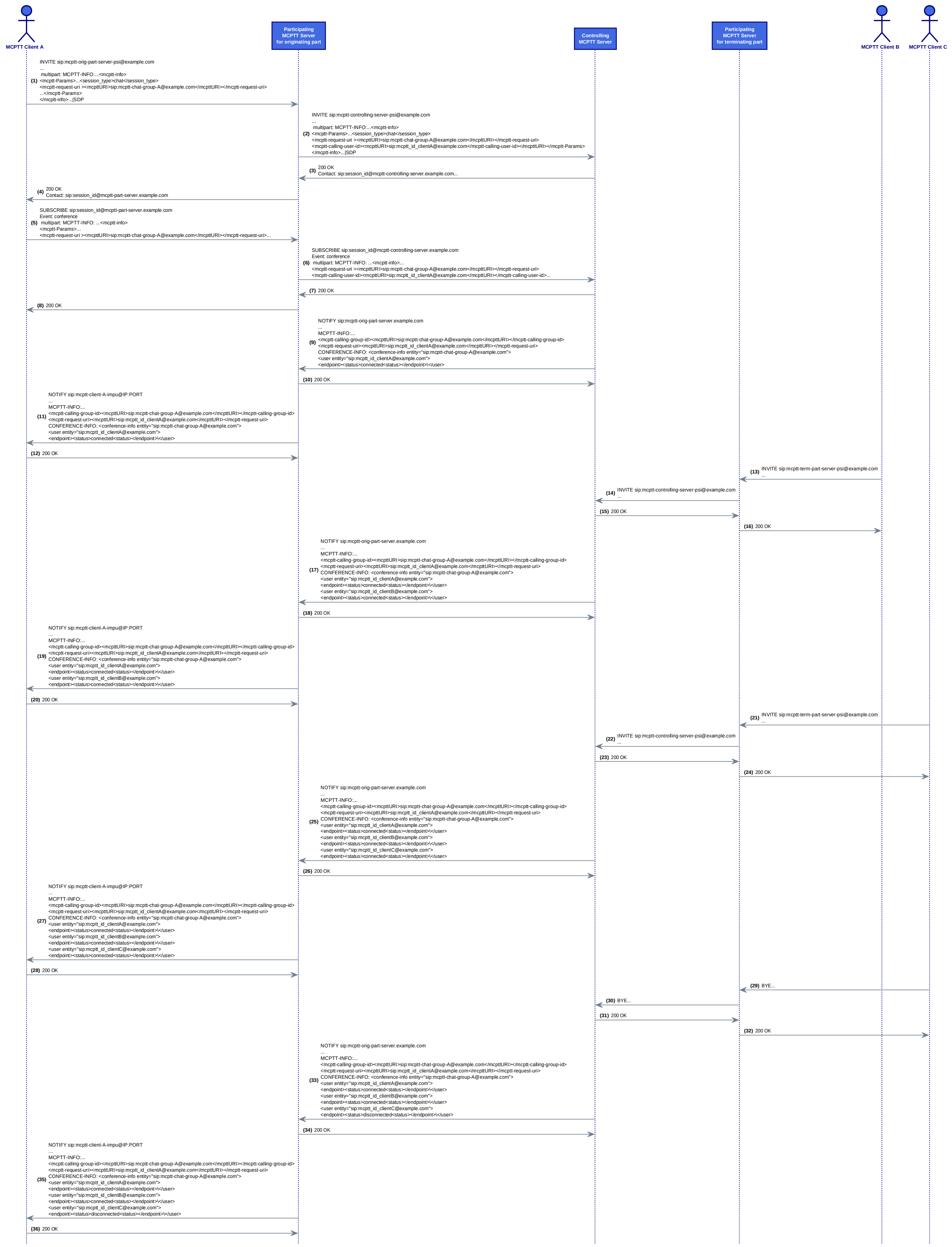

Figure 62e: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/SUBCONF/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/SUBCONF/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity - among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates an on demand chat group call
	2	check	On demand chat group call correctly stablished
	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
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 9.2.2.2.11 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 [CONNMCPTT/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

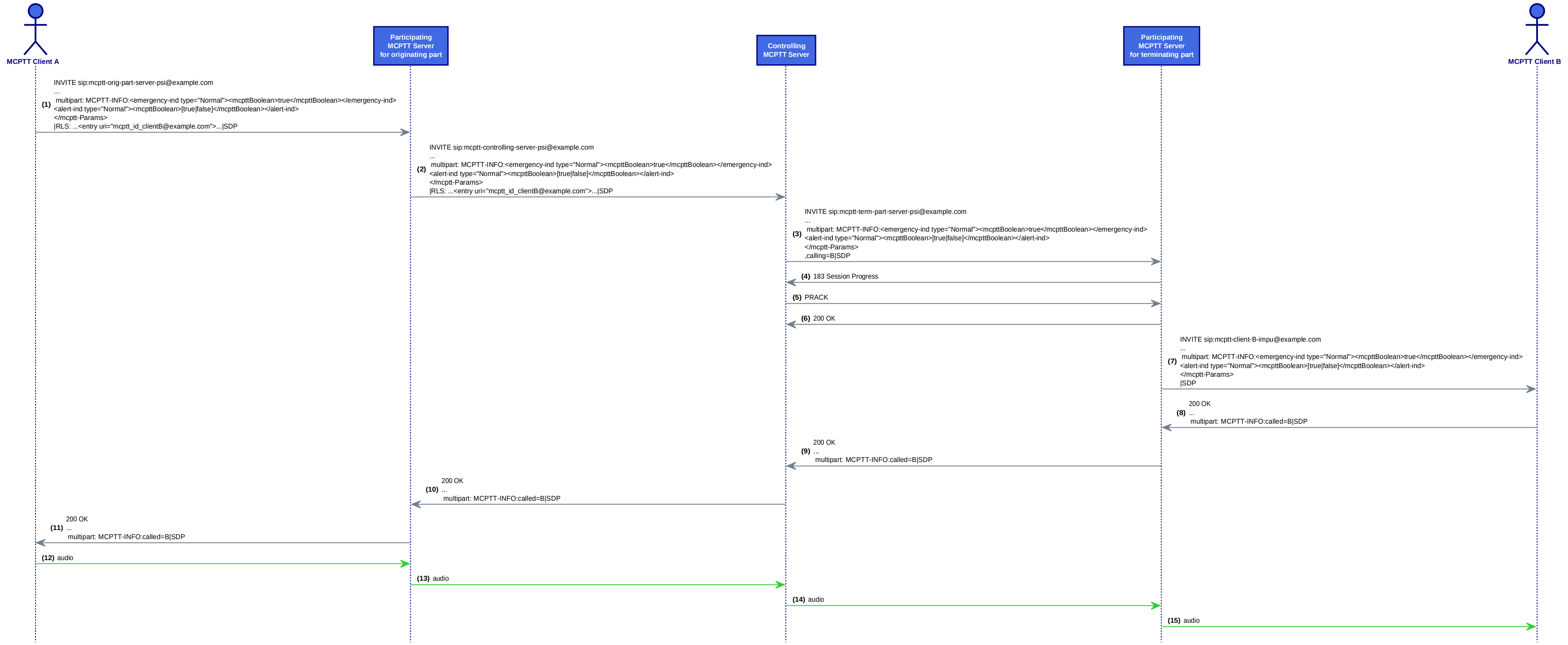

Figure 62f: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a emergency private call with automatic commencement mode		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
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 ETSI TS 124 379 [9].

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 of ETSI TS 124 379 [9]) 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 of ETSI TS 124 379 [9]), upon checking the identity and authorization of the MCPTT user, will forward the message to the controlling (clause 12.1.3.1 of ETSI TS 124 379 [9]). The controlling server will generate an outgoing SIP MESSAGE request notification of the MCPTT user's emergency alert indication as specified in ETSI TS 124 379 [9] 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

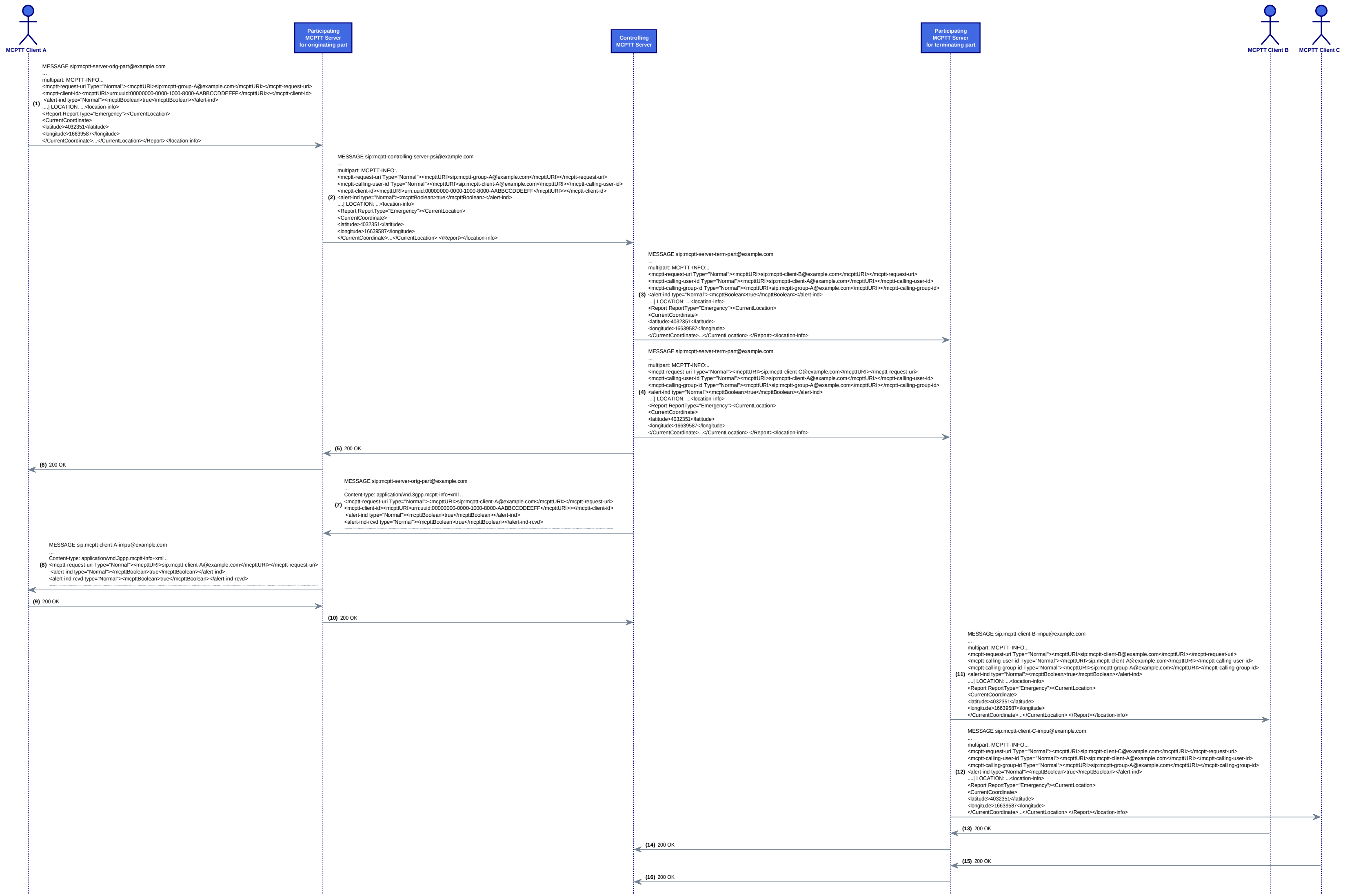

Figure 62g: CONN-MCPTT/ONN/EMERG-ALERT/MSG/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/EMERG-ALERT/MSG/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the initiation of an emergency alert		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Calling user is affiliated to the group		
Test Sequence	**Step**	**Type**	**Description**
	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 reeived 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
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

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 of ETSI TS 124 379 [9]) will forward the message to the controlling. The controlling server (clause 12.1.3.2 of ETSI TS 124 379 [9]) 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

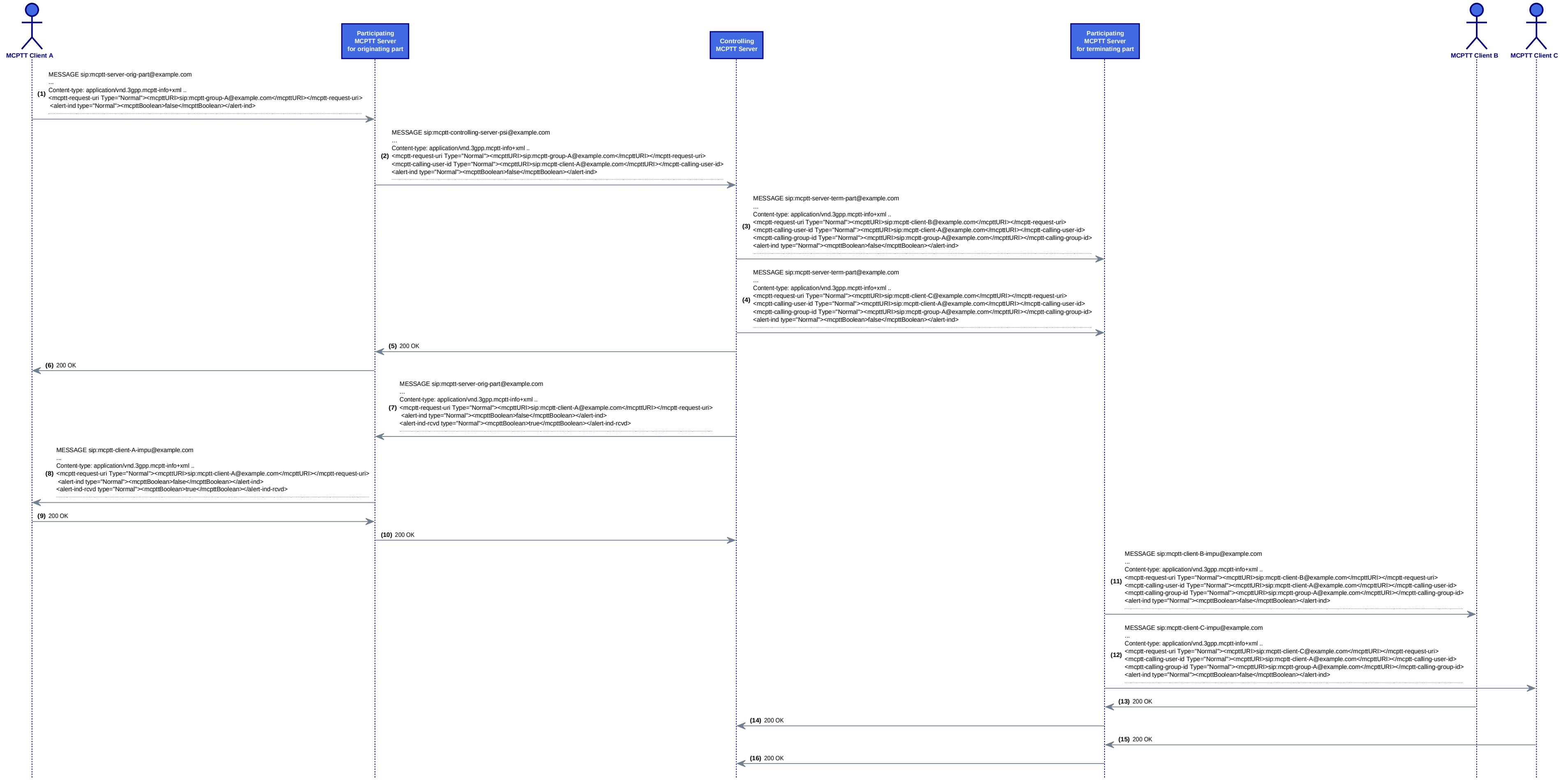

Figure 62h: CONN-MCPTT/ONN/EMERG-ALERT/MSG/02 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

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

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">CONN-MCPTT/ONN/EMERG-ALERT/MSG/02</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the cancellation of an emergency alert</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)
• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)
• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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
• User 1 had sent emergency alert state</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td></td><td>1</td><td>stimulus</td><td>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</td></tr>
<tr><td></td><td>2</td><td>check</td><td>SIP MESSAGE received at the MCPTT participating server of User 1</td></tr>
<tr><td></td><td>3</td><td>check</td><td>The participating server check rules, maps identities and forwards the message to the controlling server</td></tr>
<tr><td></td><td>4</td><td>check</td><td>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</td></tr>
<tr><td></td><td>5</td><td>check</td><td>The MCPTT controlling server sends a notification of the reception of the alert cancellation to User 1 through the originating participating</td></tr>
<tr><td></td><td>6</td><td>check</td><td>Alert cancellation indication received at mcptt_id_clientA</td></tr>
<tr><td></td><td>7</td><td>check</td><td>"n" alert cancellation indicating SIP MESSAGES received at mcptt_id_clientX</td></tr>
<tr><td></td><td>8</td><td>verify</td><td>All group members are notified of the cancellation and the originating client sets the internal status to "MEA 1: no-alert"</td></tr>
<tr><td colspan="4">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 9.2.2.2.11 in ETSI TS 124 379 [9].</td></tr>
</table>

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 is 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

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Trace Pending
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Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/EMERG-ALERT/MSG/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the cancellation of an emergency alert originated by another user.		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • User 1 had sent an emergency alert		
Test Sequence	**Step**	**Type**	**Description**
	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"
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

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 6.3.2.4.1 of ETSI TS 124 379 [9]. 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 of 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

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Trace Pending
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Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/EMERG-ALERT/MSG/04		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the notification of entry in an emergency alert area		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Emergency geo area preconfigure in participating		
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 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
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

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	
Identifier	CONN-MCPTT/ONN/EMERG-ALERT/MSG/05
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the notification of exit from an emergency alert area
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Emergency geo area preconfigured in the participating

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
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

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

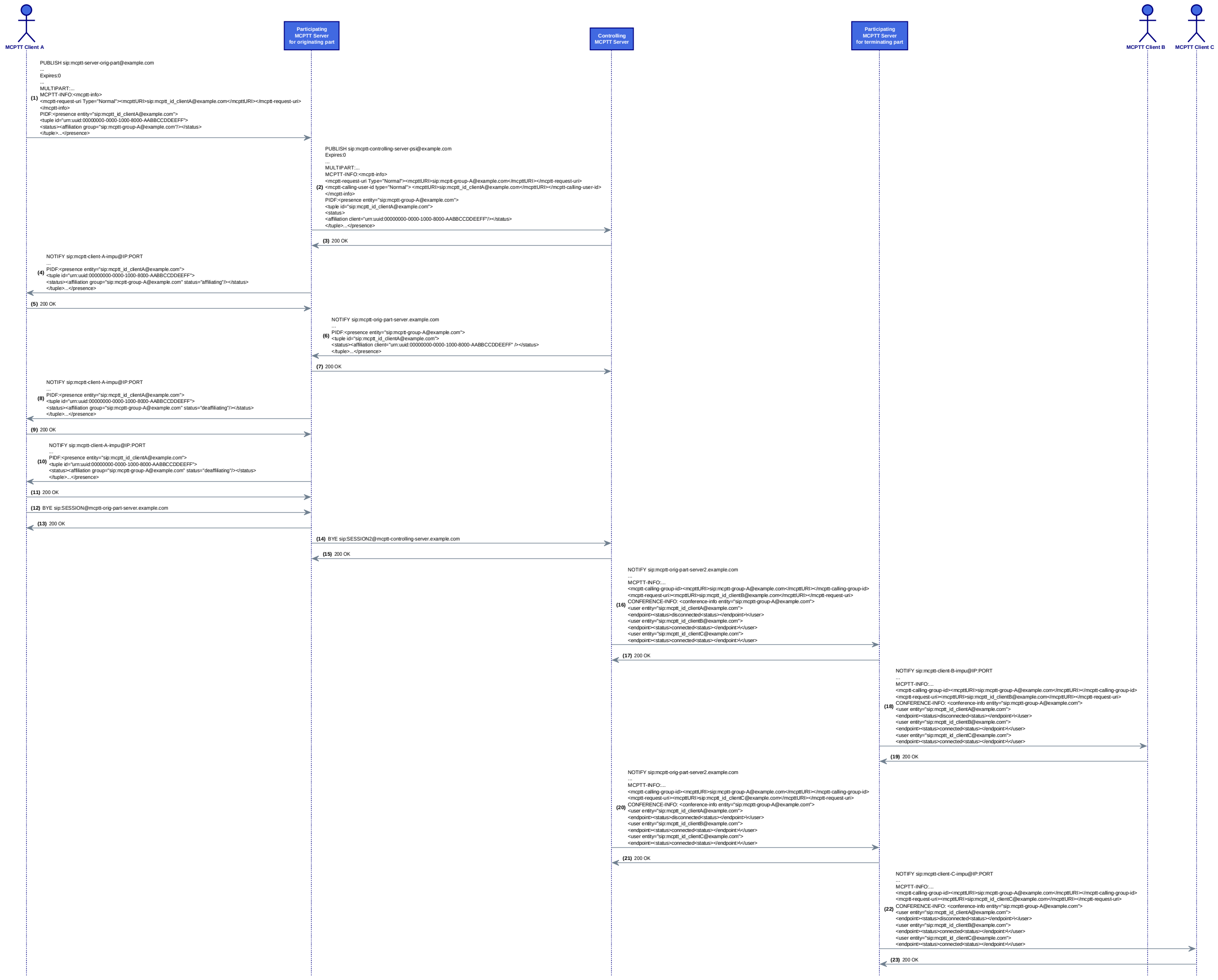

Figure 62l: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/08 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

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

Interoperability Test Description	
Identifier	CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/08
Test Objective	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
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Pre-test conditions</td><td colspan="3">IP connectivity among all elements of the specific scenario
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
Ongoing prearranged on demand group call</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="9">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>MCPTT Client of User 1 (mcptt_id_clientA@example.com) sends a de-affiliation request to mcptt-group-a</td></tr>
<tr><td>2</td><td>check</td><td>SIP PUBLISH received at the MCPTT participating server of User 1</td></tr>
<tr><td>3</td><td>check</td><td>The participating server forwards the PUBLISH to the controlling server owning mcptt-group-a</td></tr>
<tr><td>4</td><td>check</td><td>Upon deaffiliation, the controlling server sends a BYE to participating that forwards it to the MCPTT Client</td></tr>
<tr><td>5</td><td>verify</td><td>BYE received at the MCPTT Client of User 1 who leaves the ongoing call</td></tr>
<tr><td>6</td><td>check</td><td>Controlling sends the notification about User 1 leaving the ongoing group call to those group members affiliated to the conference event</td></tr>
<tr><td>7</td><td>check</td><td>Terminating participating server forwards the notifications to User 2 and User 3</td></tr>
<tr><td>8</td><td>verify</td><td>User 2 and User 3 received the update on the conference event.</td></tr>
<tr><td colspan="4">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 9.2.2.2.11 in ETSI TS 124 379 [9].</td></tr>
</table>

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

[CONN-MCDATA/ONN/O2O/FD/HTTP/01] (clause 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] (clause 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] (clause 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 in ETSI TS 124 282 [8] 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 (both in ETSI TS 124 282 [8]).

Since clause 10.2.1.2.2 in ETSI TS 124 282 [8] would be already covered in [CONN-MCDATA/ONN/O2O/FD/HTTP/01] (clause 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 of ETSI TS 124 282 [8]. Later, upon final download before the timeout a download complete FD NOTIFICATION will be issued.

Message Sequence Diagram

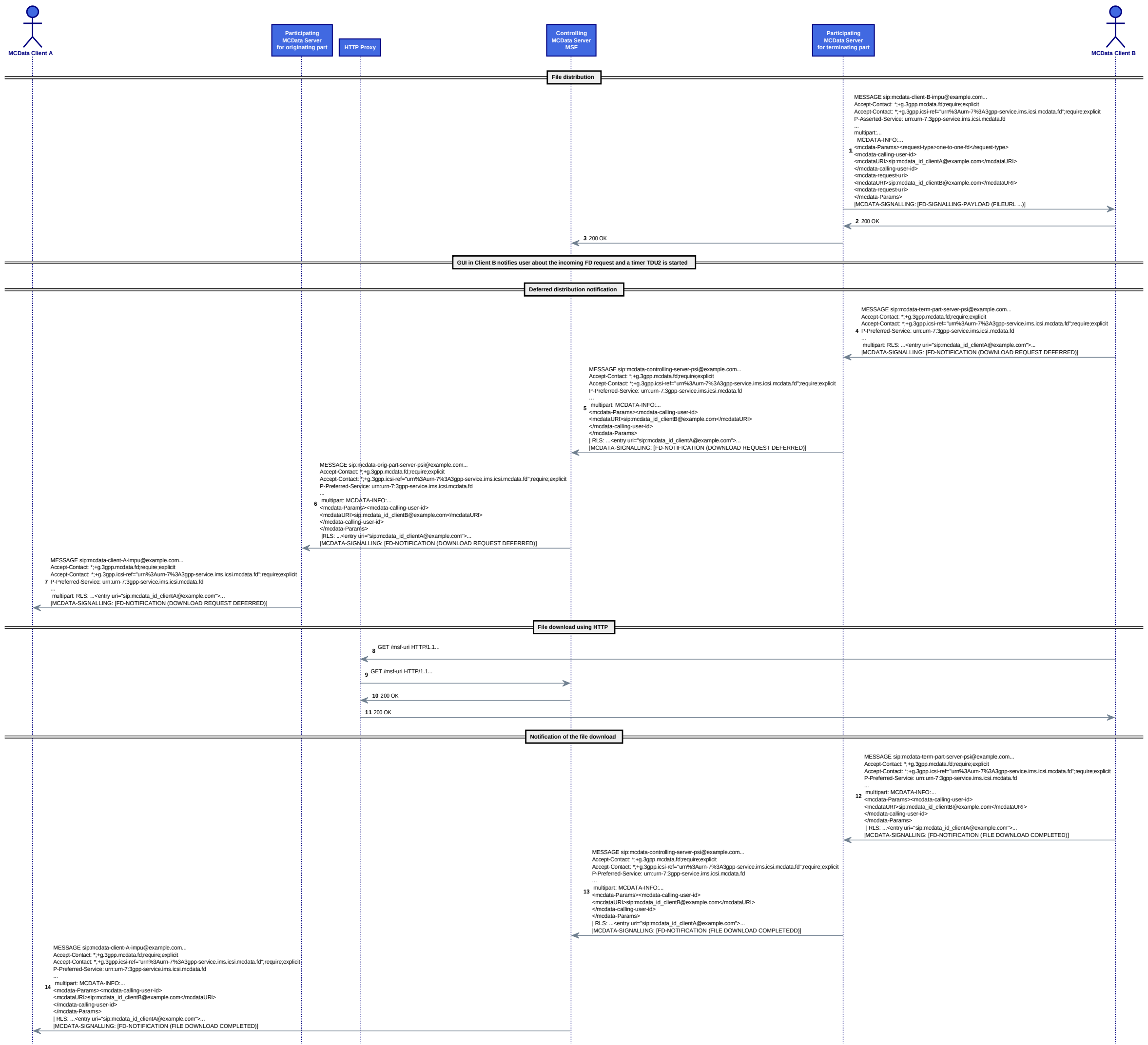

Figure 62m: CONN-MCDATA/ONN/O2O/FD/HTTP/03 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/GROUP/FD/HTTP/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, HTTP file distribution without mandatory download and deferred request		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • HTTP (see IETF RFC 7230 [38]) • TLS (see IETF RFC 8446 [39]) • SSL (see IETF RFC 6101 [40])		
Applicability	• MCData-Client_ONN-MCData-FD-SP (clause 6.2) • MCData-Part_ONN-MCData-FD-SP, MCData-Part_AFFIL (clause 6.9) • MCData-Ctrl_ONN-MCData-FD-SP, MCData-Ctrl_GMS (clause 6.10)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • FD download request without mandatory download already sent and deliveried by the controlling		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	FD request without mandatory download ie
	2	check	The MCData 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 MCData client A
	6	stimulus	Client B finally requests the download of the the file
	7	check	MCData Client B downloads the file from (through) the MSF
	8	check	Download completed notification sent from MCData 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 MCData 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 in ETSI TS 124 282 [8], shall build the SIP MESSAGE request as specified in clause 6.2.4.1 in ETSI TS 124 282 [8], 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 in ETSI TS 124 282 [8]. 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 in ETSI TS 124 282 [8] 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

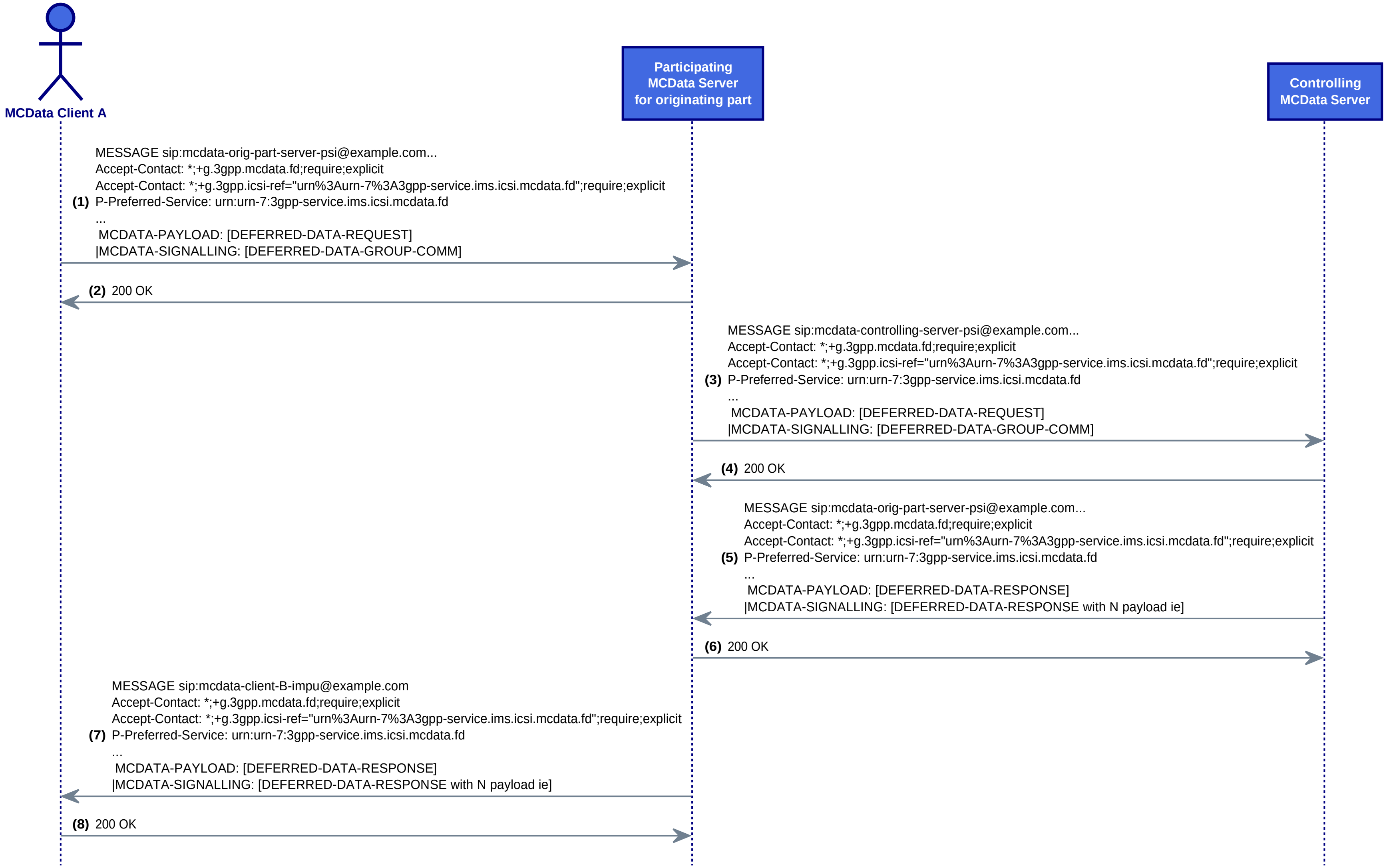

Figure 62n: CONN-MCDATA/ONN/DEFER/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/DEFER/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, retrieve list of deferred group communications		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • HTTP (see IETF RFC 7230 [38]) • TLS (see IETF RFC 8446 [39]) • SSL (see IETF RFC 6101 [40])		
Applicability	• MCData-Client_ONN-MCData-FD-SP (clause 6.2) • MCData-Part_ONN-MCData-FD-SP, MCData-Part_AFFIL (clause 6.9) • MCData-Ctrl_ONN-MCData-FD-SP, MCData-Ctrl_GMS (clause 6.10)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • The controlling server gets track of the list of deferred group communications		
Test Sequence	**Step**	**Type**	**Description**
	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 clause 14.2.1 the MCData Client, upon receiving a request from the MCData user to send an enhanced status to an MCData group and, after checking that the <mcdata-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 MCData user selected operation value from <mcdata-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] (clause 7.2.42). The associated Payload content type "Enhanced Status" is codified according to table 15.2.13-2 in ETSI TS 124 282 [8] 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] (clause 7.2.42).

Message Sequence Diagram

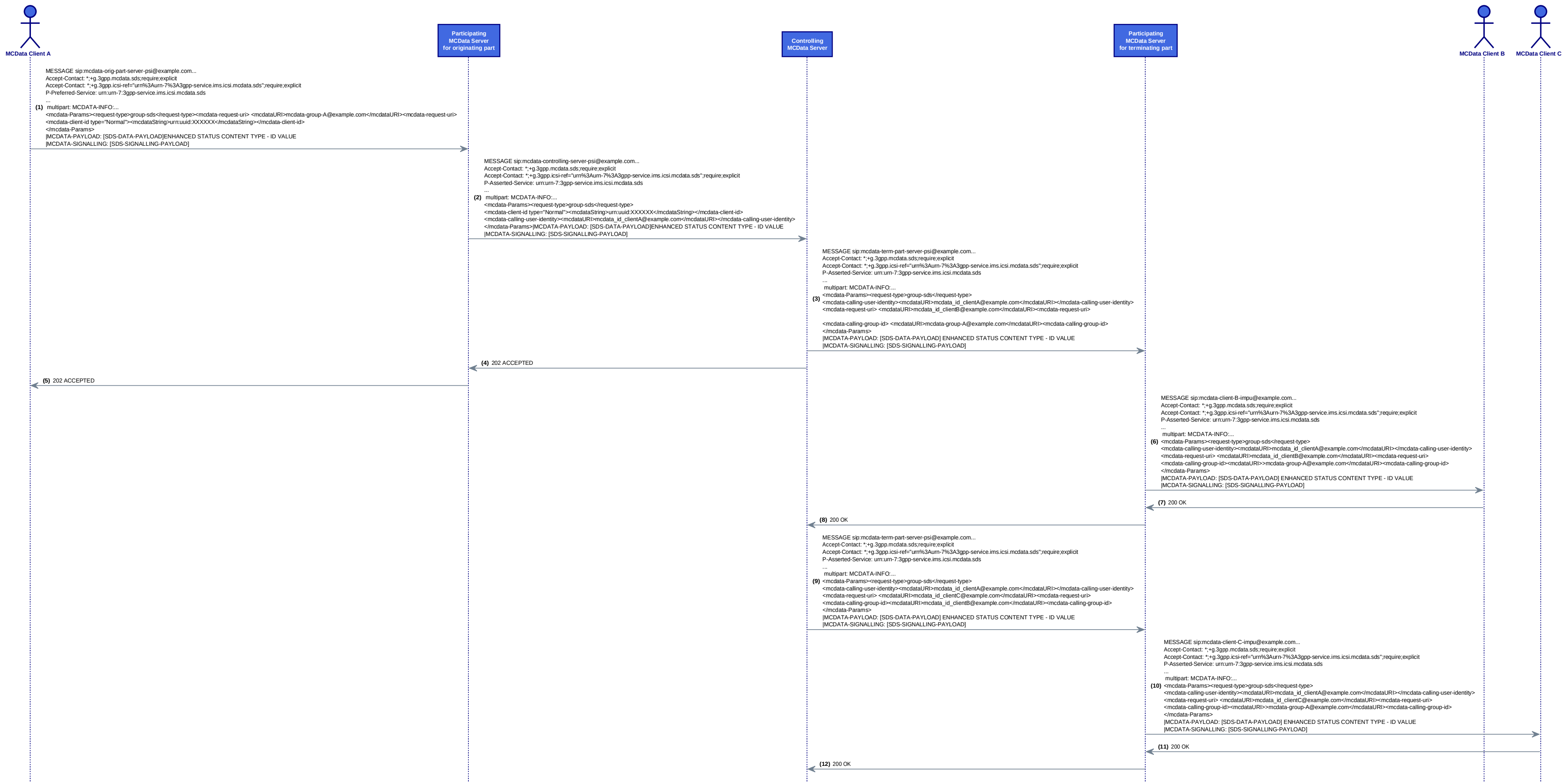

Figure 62o: CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/SIP/02 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

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

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/GROUP/STANDALONE/SDS/SIP/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, submission and reception of enhanced status SDS		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • HTTP (see IETF RFC 7230 [38]) • TLS (see IETF RFC 8446 [39]) • SSL (see IETF RFC 6101 [40])		
Applicability	• MCData-Client_ONN-MCData-FD-SP (clause 6.2) • MCData-Part_ONN-MCData-FD-SP, MCData-Part_AFFIL (clause 6.9) • MCData-Ctrl_ONN-MCData-FD-SP, MCData-Ctrl_GMS (clause 6.10)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Per group preset values for enhanced status stored		
Test Sequence	**Step**	**Type**	**Description**
	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 groupd 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 mcdata_id_clientB@example.com and User 3 mcdata_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

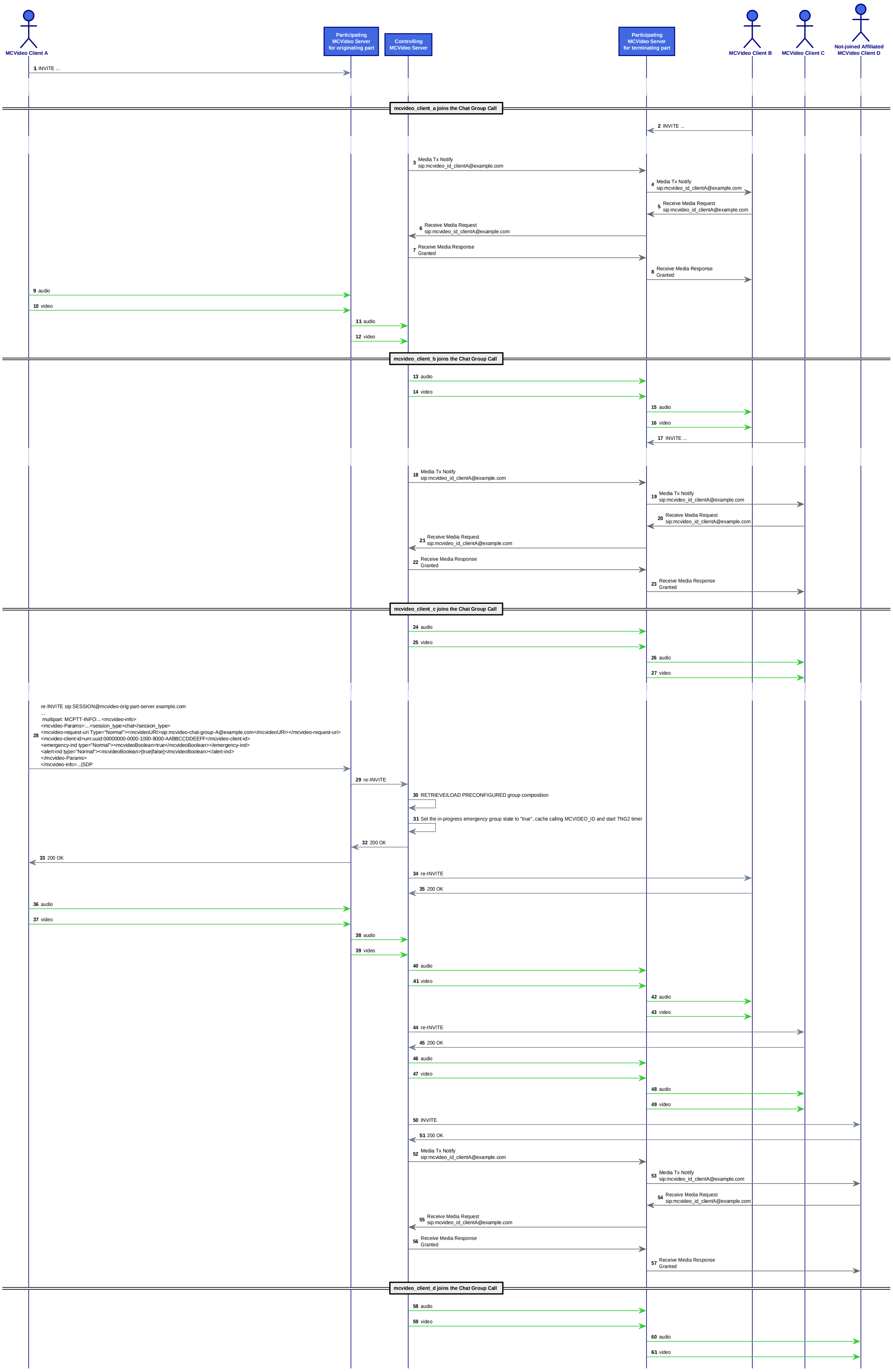

Figure 62p: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/02 Message Sequence

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%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>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			
Identifier	CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling SIP signalling for a Group Call that is upgraded to Emergency		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario. • 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 and users properly affiliated to the called chat group. • Ongoing on-demand chat Group Call where Clients A, B and C have joined (as in clause 7.2.9) while D has not.		
Test Sequence	**Step**	**Type**	**Description**
	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

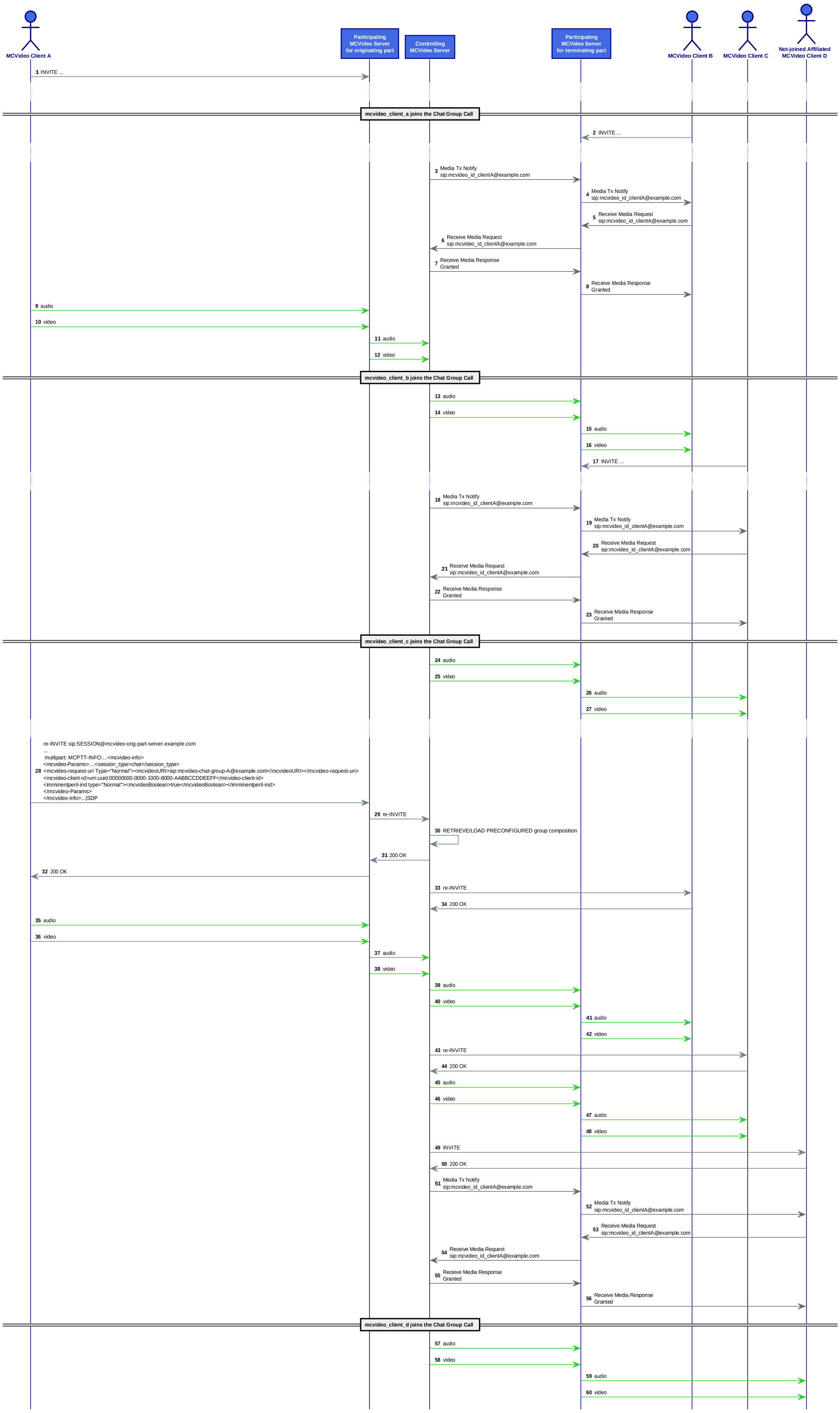

Figure 62q: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/03 Message Sequence

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%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>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			
Identifier	CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/03		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 and users properly affiliated to the called chat group • Ongoing on-demand chat Group Call where Clients A, B and C have joined (as in clause 7.2.9) while D has not		
Test Sequence	**Step**	**Type**	**Description**
	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

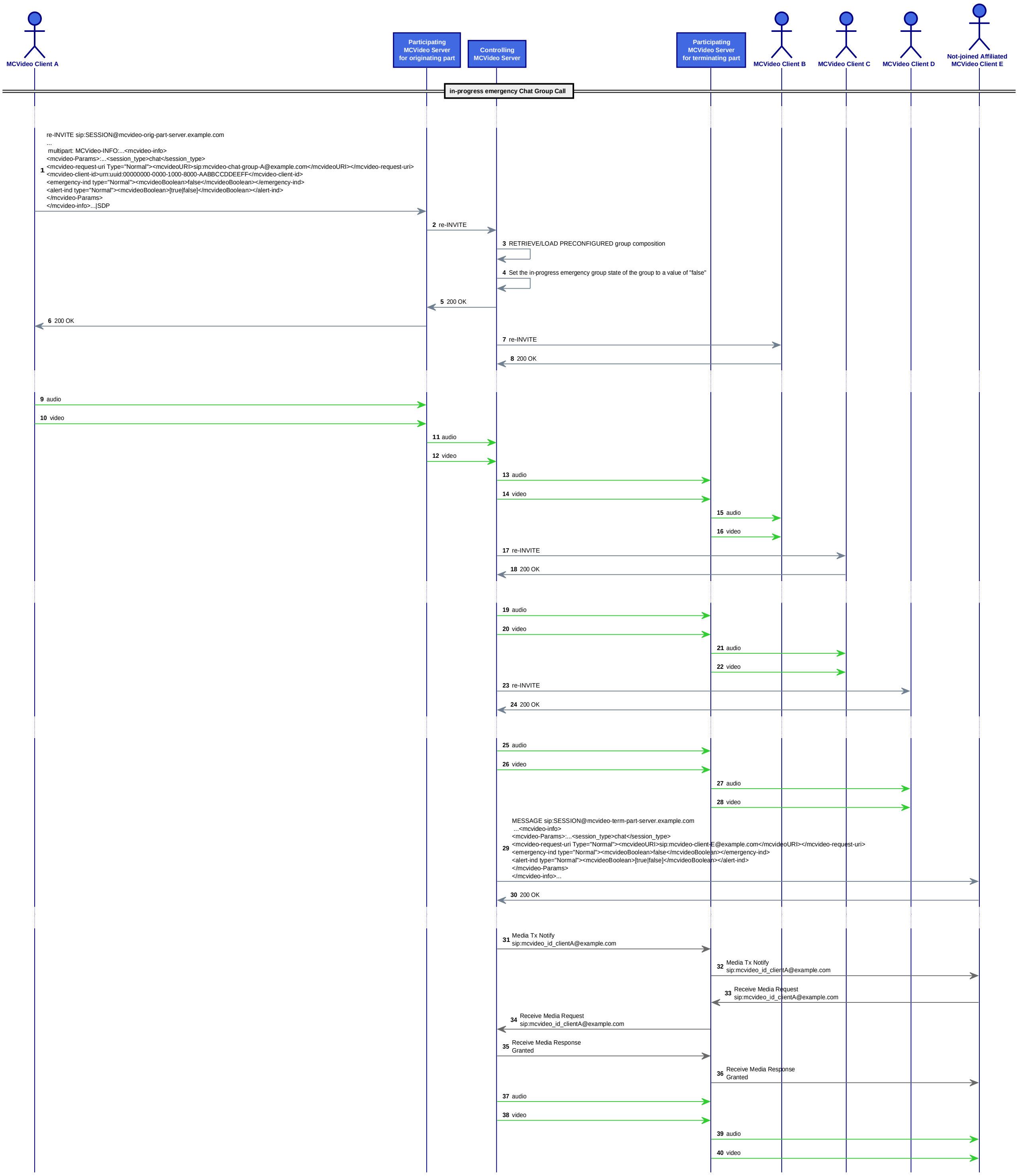

Figure 62r: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/04 Message Sequence

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%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>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			
Identifier	CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/04		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 and users properly affiliated to the called chat group • Ongoing on-demand emergency chat Group Call		
Test Sequence	**Step**	**Type**	**Description**
	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

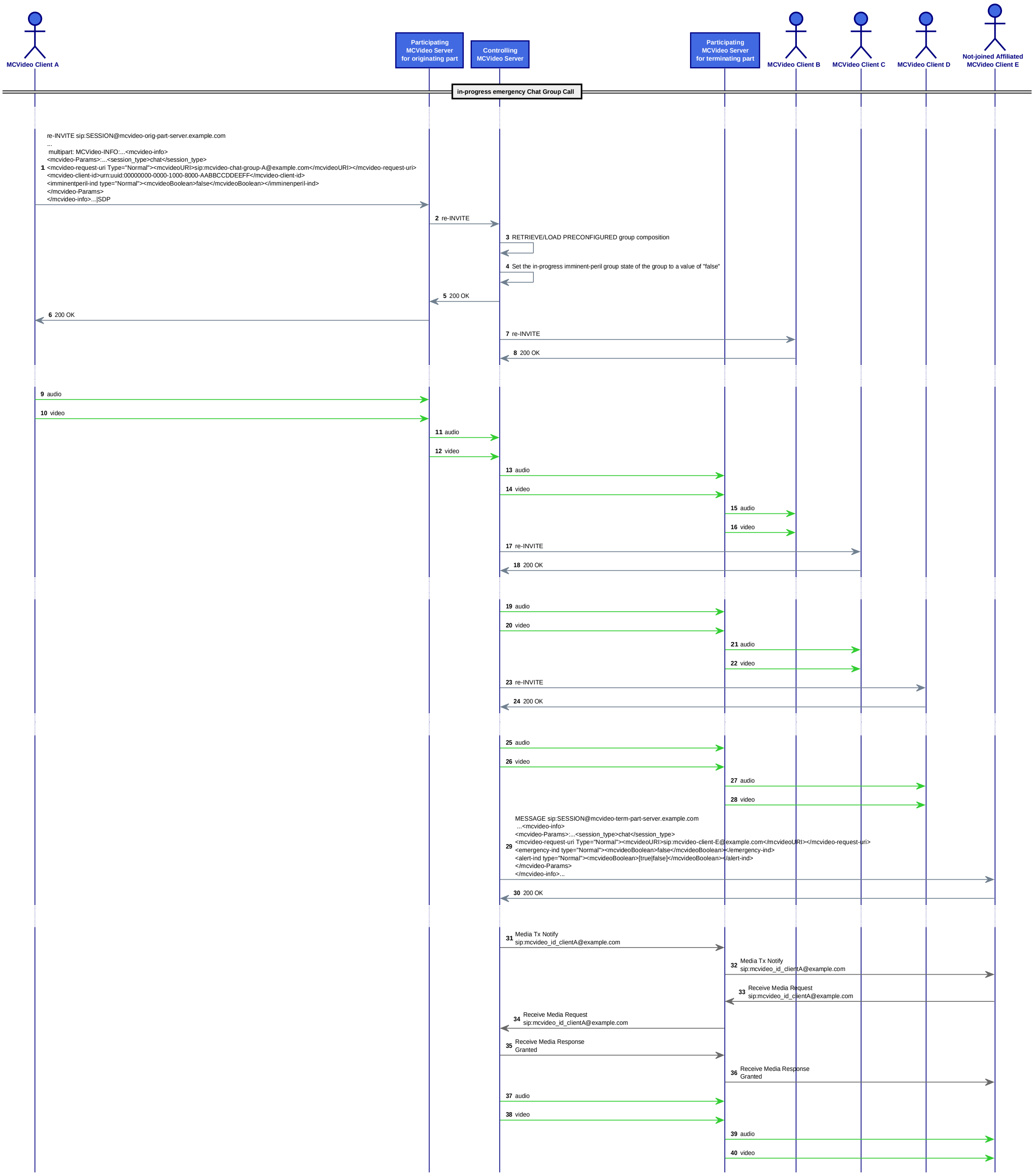

Figure 62s: CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/05 Message Sequence

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%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>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			
Identifier	CONN-MCVIDEO/ONN/GROUP/CHAT/ONDEM/NTC/05		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 and users properly affiliated to the called chat group • Ongoing on-demand imminent-peril chat Group Call		
Test Sequence	**Step**	**Type**	**Description**
	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

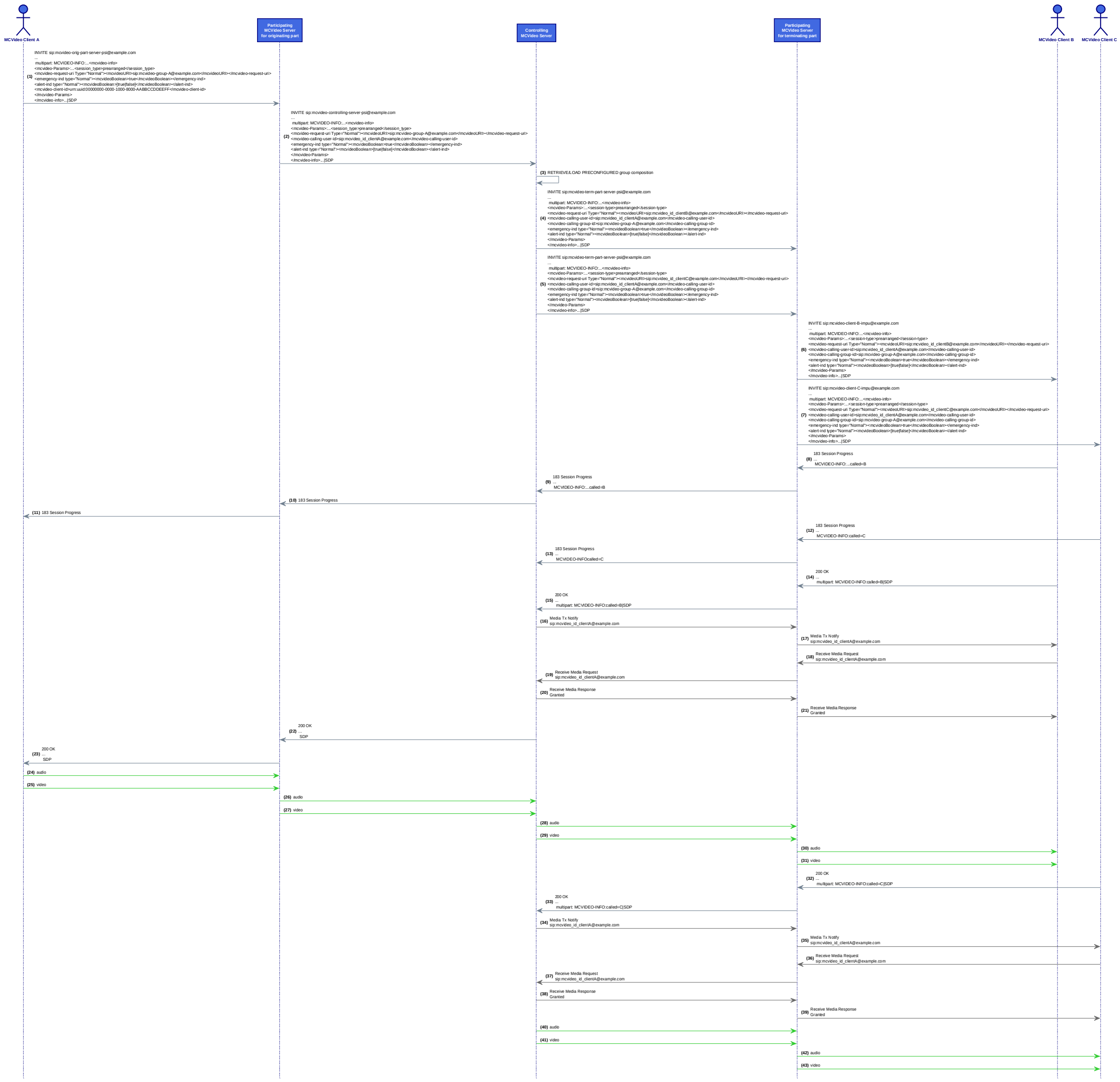

Figure 62t: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/02 Message Sequence

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%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>
        <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			
Identifier	CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand emergency Group Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	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 (clause7.2.56) 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

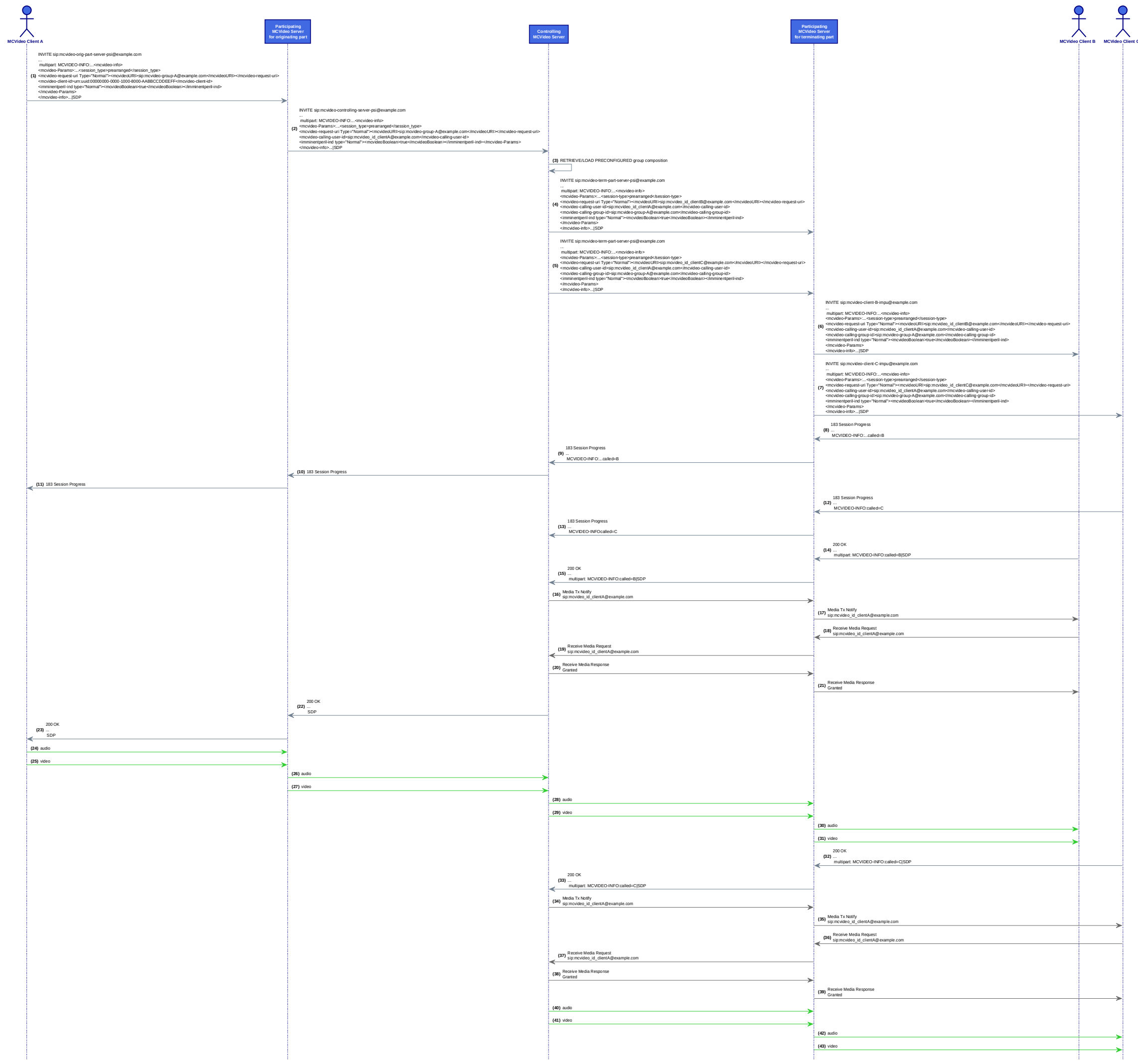

Figure 62u: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/03 Message Sequence

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%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>
        <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			
Identifier	CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of an Imminent Peril pre-arranged on demand Group Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	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

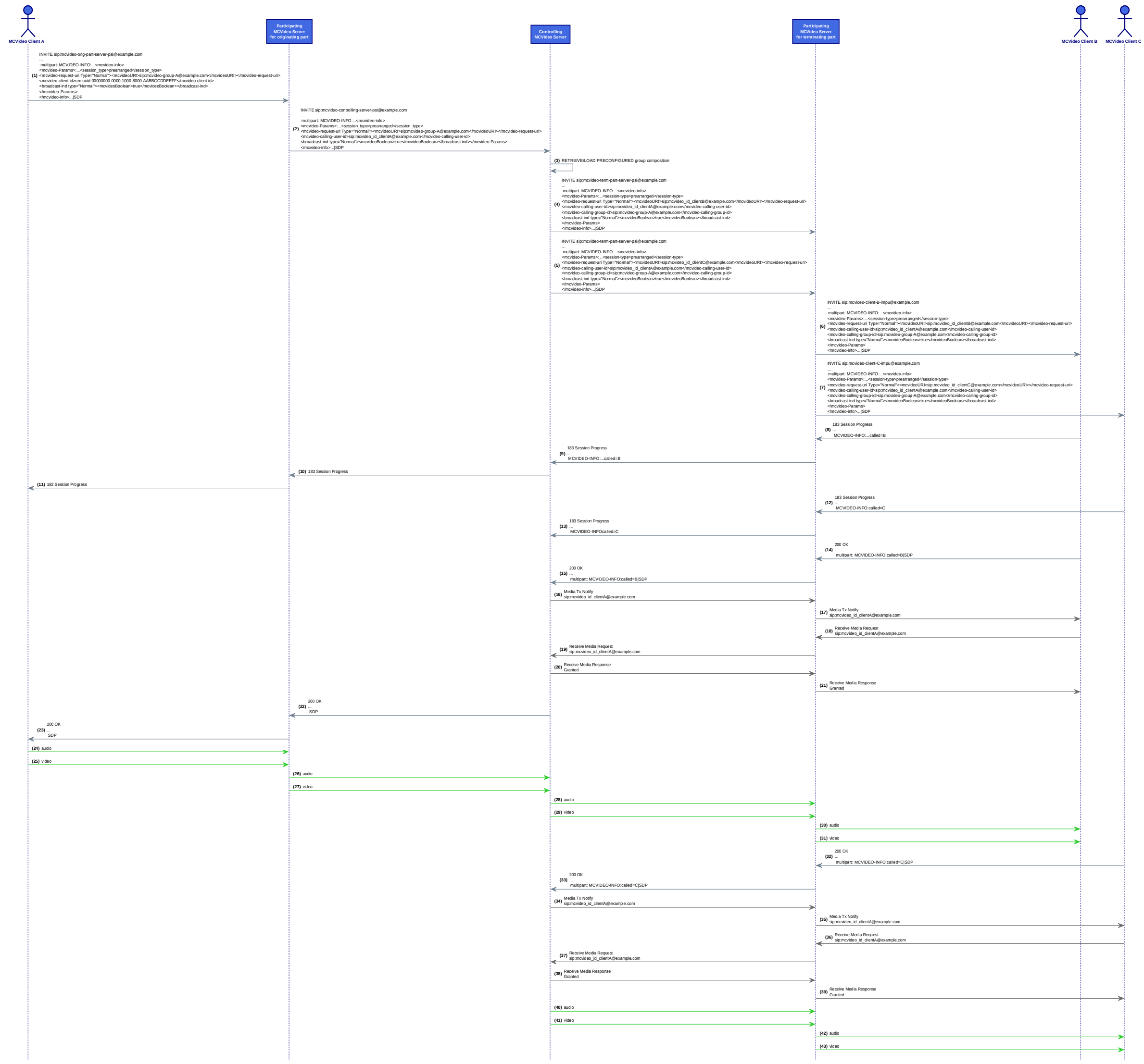

Figure 62v: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/04 Message Sequence

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%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>
        <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			
Identifier	CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/04		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of an Imminent Peril pre-arranged on demand Group Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	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

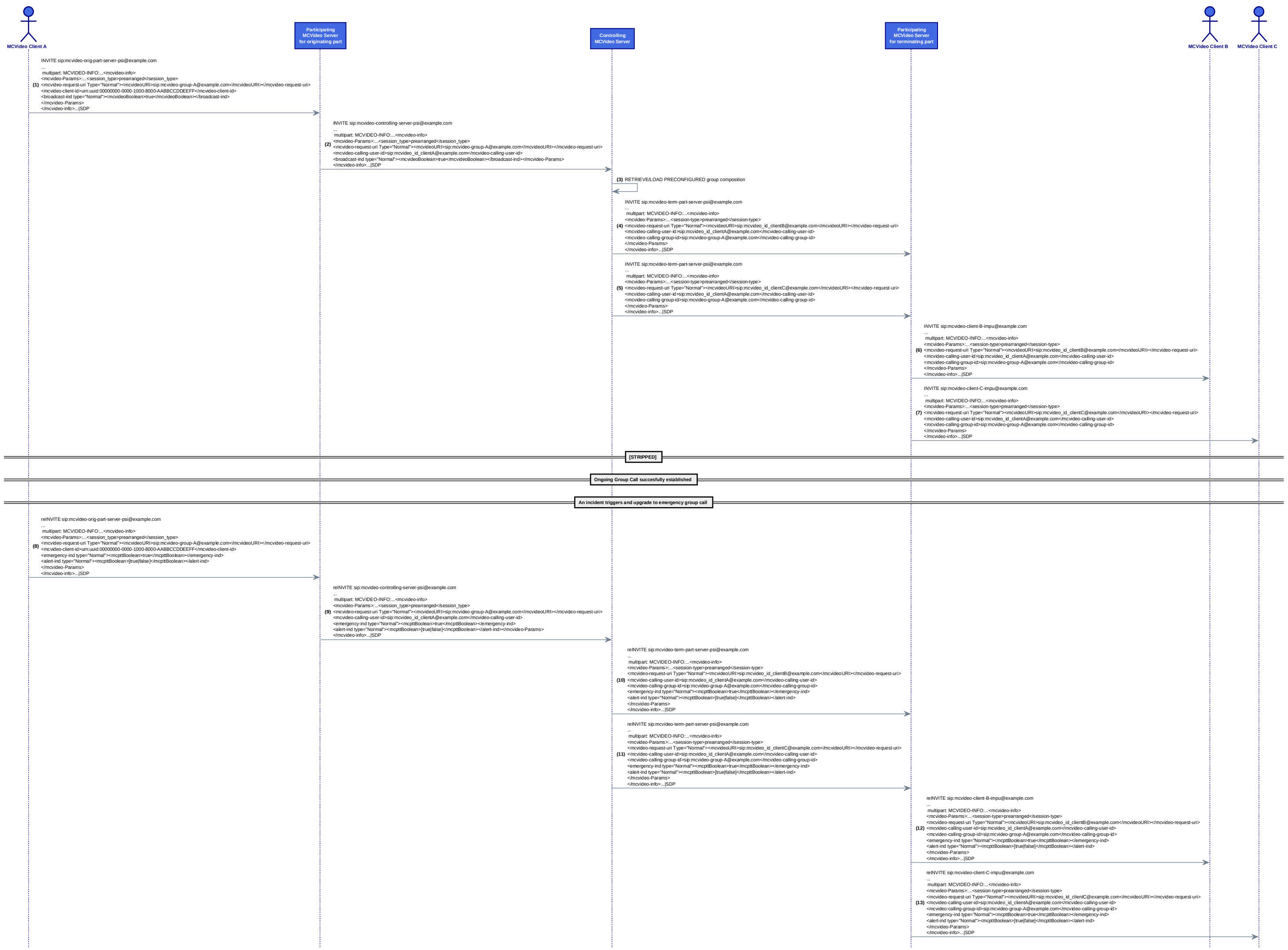

Figure 62w: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/05 Message Sequence

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			
Identifier	CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/05		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system • Calling user is affiliated to the called group • Group Call properly established		
Test Sequence	**Step**	**Type**	**Description**
	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	re-INVITE received at the MCVideo participating server of mcvideo_id_clientA@example.com after traversing SIP core/IMS
	5	check	re-INVITE received at the MCVideo controlling server
	6	check	"n" re-INVITEs 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

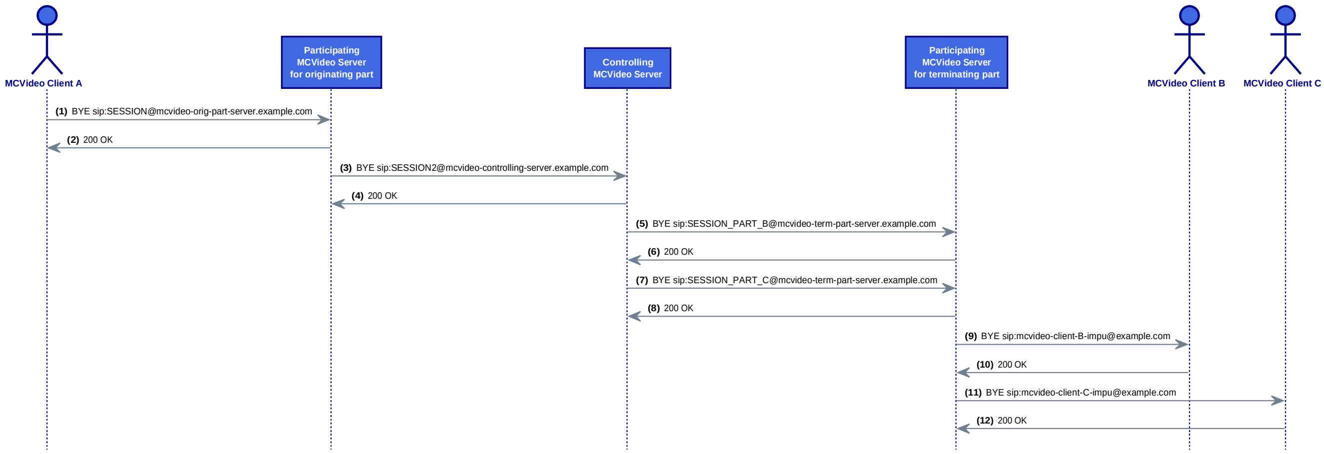

Figure 62x: CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/06 Message Sequence

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.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	
Identifier	CONN-MCVIDEO/ONN/GROUP/PREA/ONDEM/NTC/06
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling needed to terminate an ongoing MCVideo Group Call
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)

Interoperability Test Description			
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system • Calling user is affiliated to the called group • Ongoing Group Call		
Test Sequence	**Step**	**Type**	**Description**
	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
NOTE: 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.

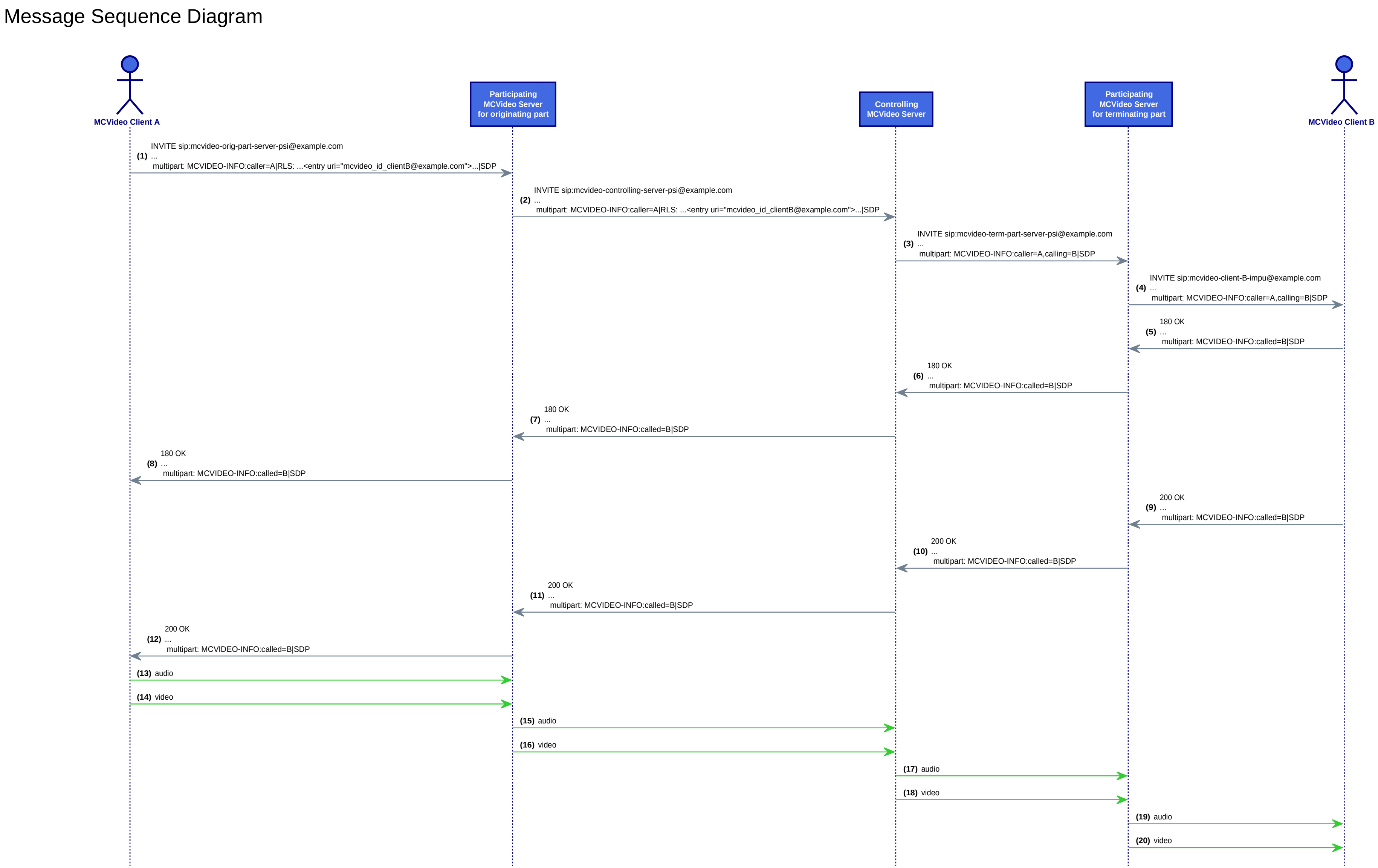

Figure 62y: CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WOTC/01 Message Sequence

Message Details

Check clause CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WTC/NTC/01 (clause 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			
Identifier	CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WOTC /01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call without transmission control with manual commencement mode		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system.		
Test Sequence	**Step**	**Type**	**Description**
	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

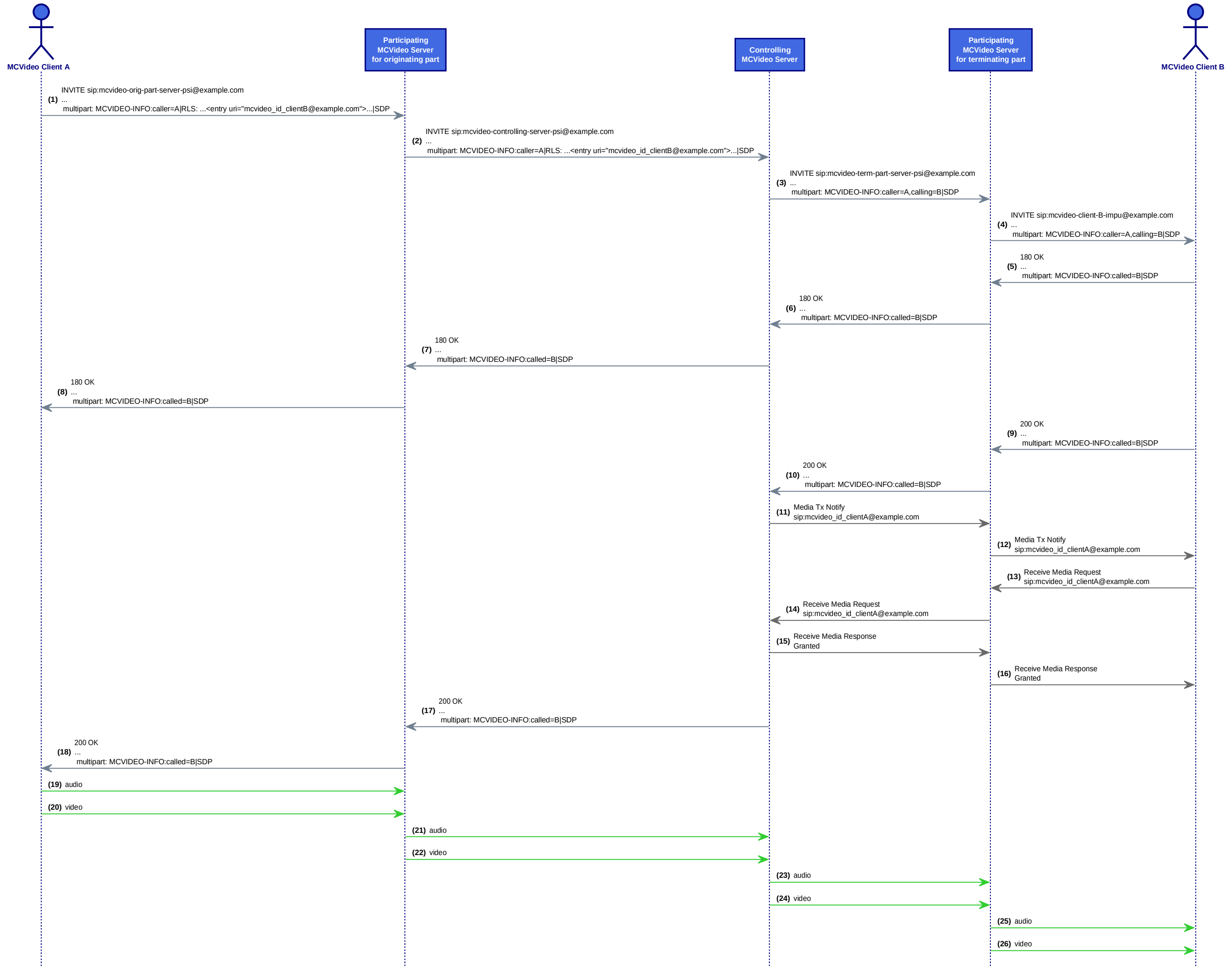

Figure 62z: CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WTC/NTC/01 Message Sequence

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			
Identifier	CONN-MCVIDEO/ONN/PRIV/MANUAL/ONDEM/WTC/NTC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with manual commencement mode		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system		
Test Sequence	**Step**	**Type**	**Description**
	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

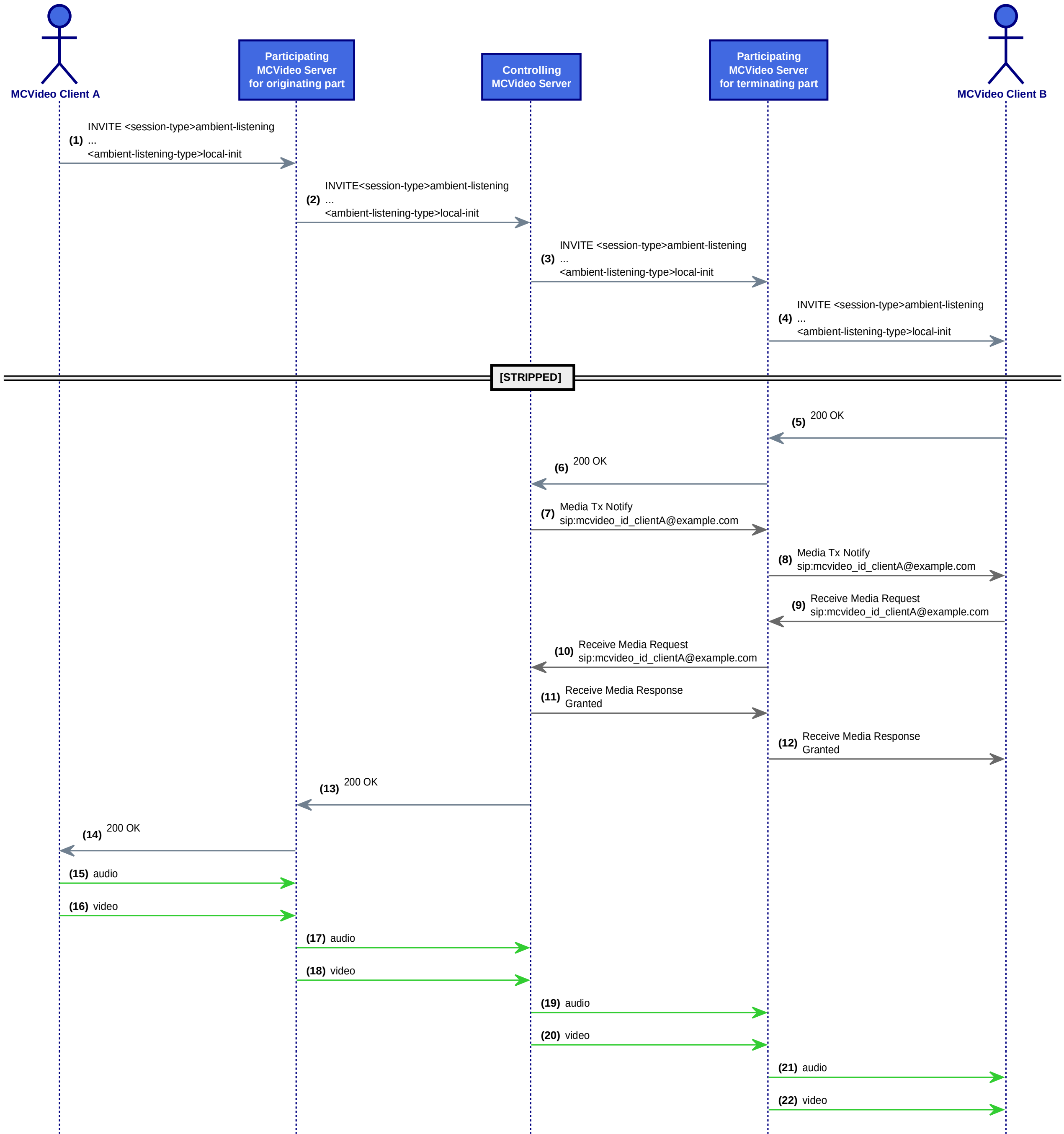

Figure 62aa: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/01 Message Sequence

Message Details

`Trace pending`

Interoperability Test Description

Table 71aa: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/01 ITD

Interoperability Test Description			
Identifier	CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a locally initiated Ambient Viewing Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system and users properly affiliated to the called chat group		
Test Sequence	**Step**	**Type**	**Description**
	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 locally an on-demand ambient viewing call [CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/02]

In this test case an authorized MCVideo user releases an ongoing locally initiated ambient viewing call. The associated procedures are described in clause 15.2.1.3 in ETSI TS 124 281 [7].

Message Sequence Diagram

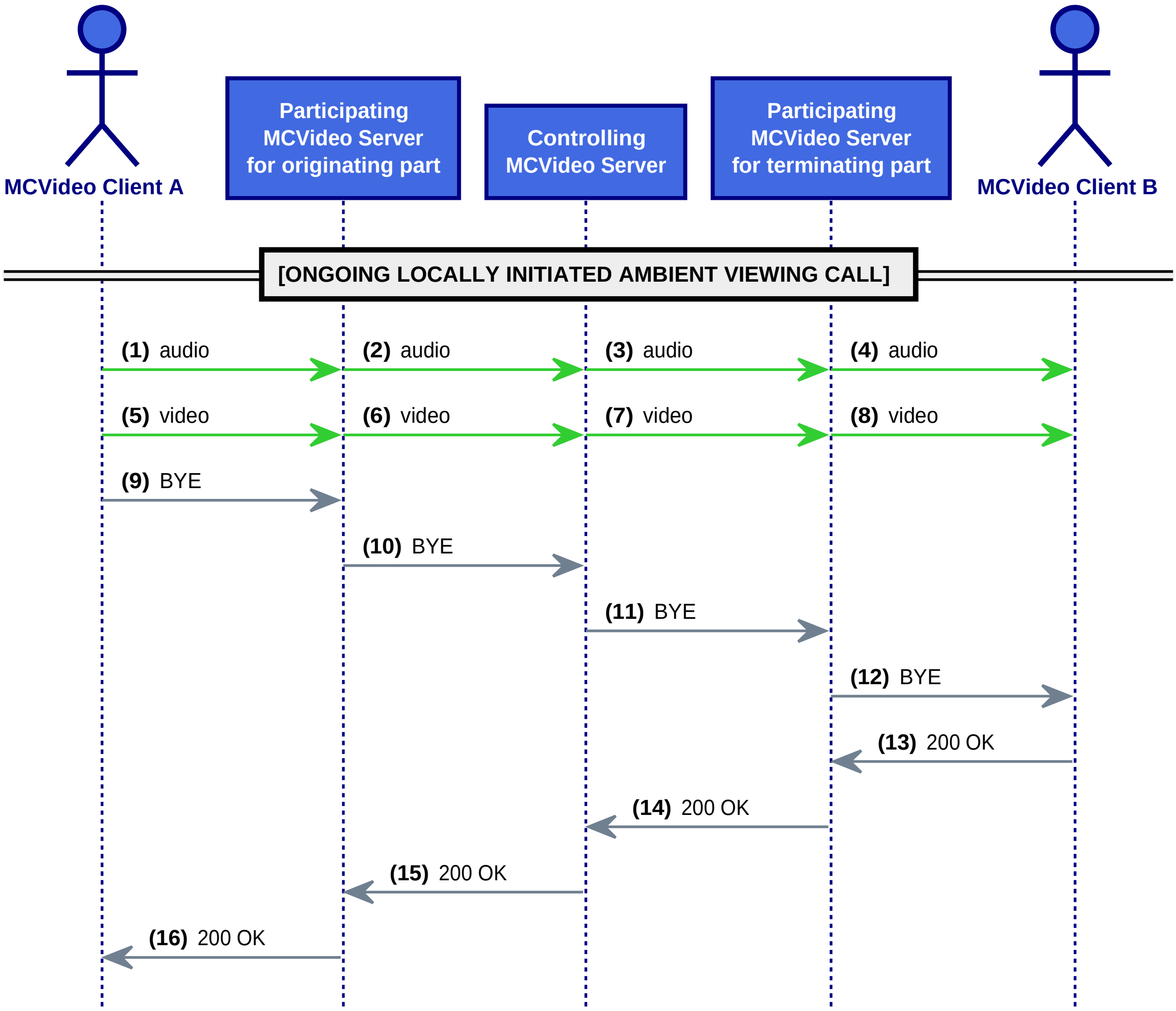

Figure 62ab: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/02 Message Sequence

Message Details

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Trace pending
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Interoperability Test Description

Table 71ab: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/02 ITD

Interoperability Test Description			
Identifier	CONN-MCVIDEO/ONN/AMBIENT/ONDEM/LOCAL/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a locally released Ambient Viewing Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system and users properly affiliated to the called chat group		
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 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

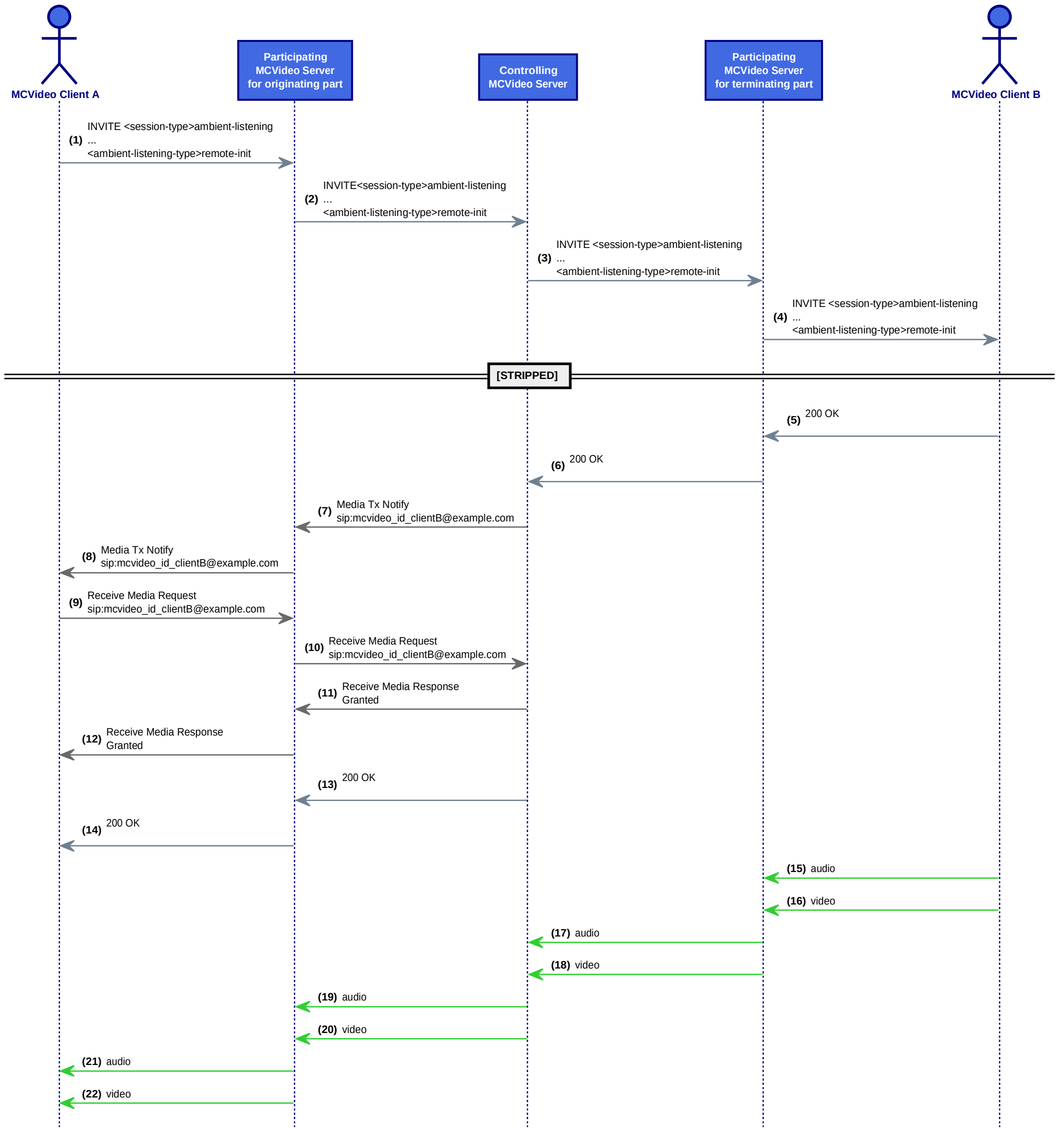

Figure 62ac: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/01 Message Sequence

Message Details

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Trace pending
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Interoperability Test Description

Table 71ac: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/01 ITD

Interoperability Test Description			
Identifier	CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a remotely initiated Ambient Viewing Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system and users properly affiliated to the called chat group		
Test Sequence	**Step**	**Type**	**Description**
	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

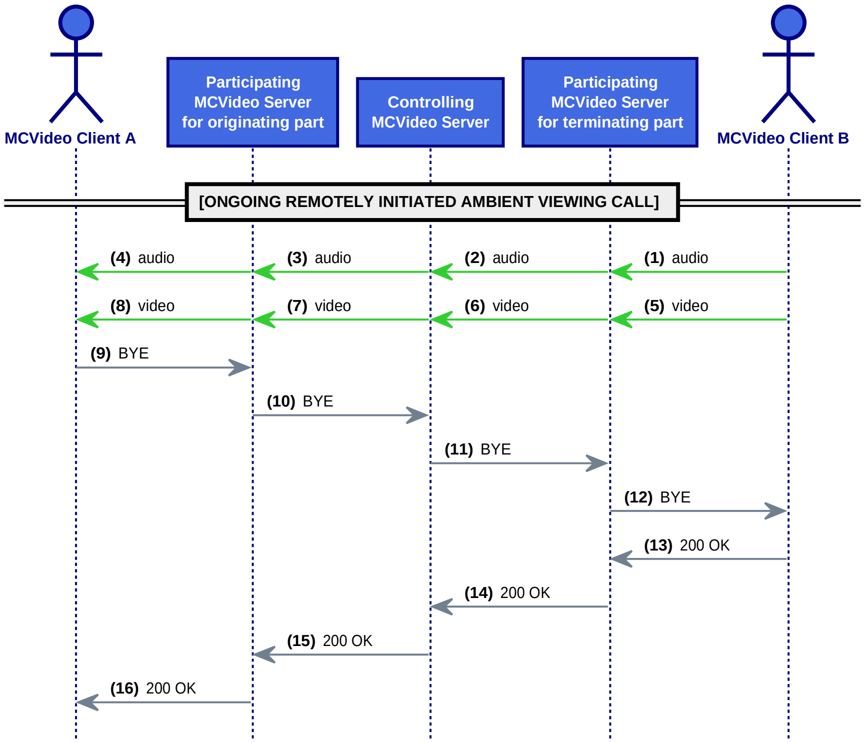

Figure 62ad: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/02 Message Sequence

Message Details

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Trace pending
```

Interoperability Test Description

Table 71ad: CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/02 ITD

Interoperability Test Description	
Identifier	CONN-MCVIDEO/ONN/AMBIENT/ONDEM/REMOTE/02
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a remotely released Ambient Viewing Call
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system and users properly affiliated to the called chat group

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 in ETSI TS 124 181 [7], 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

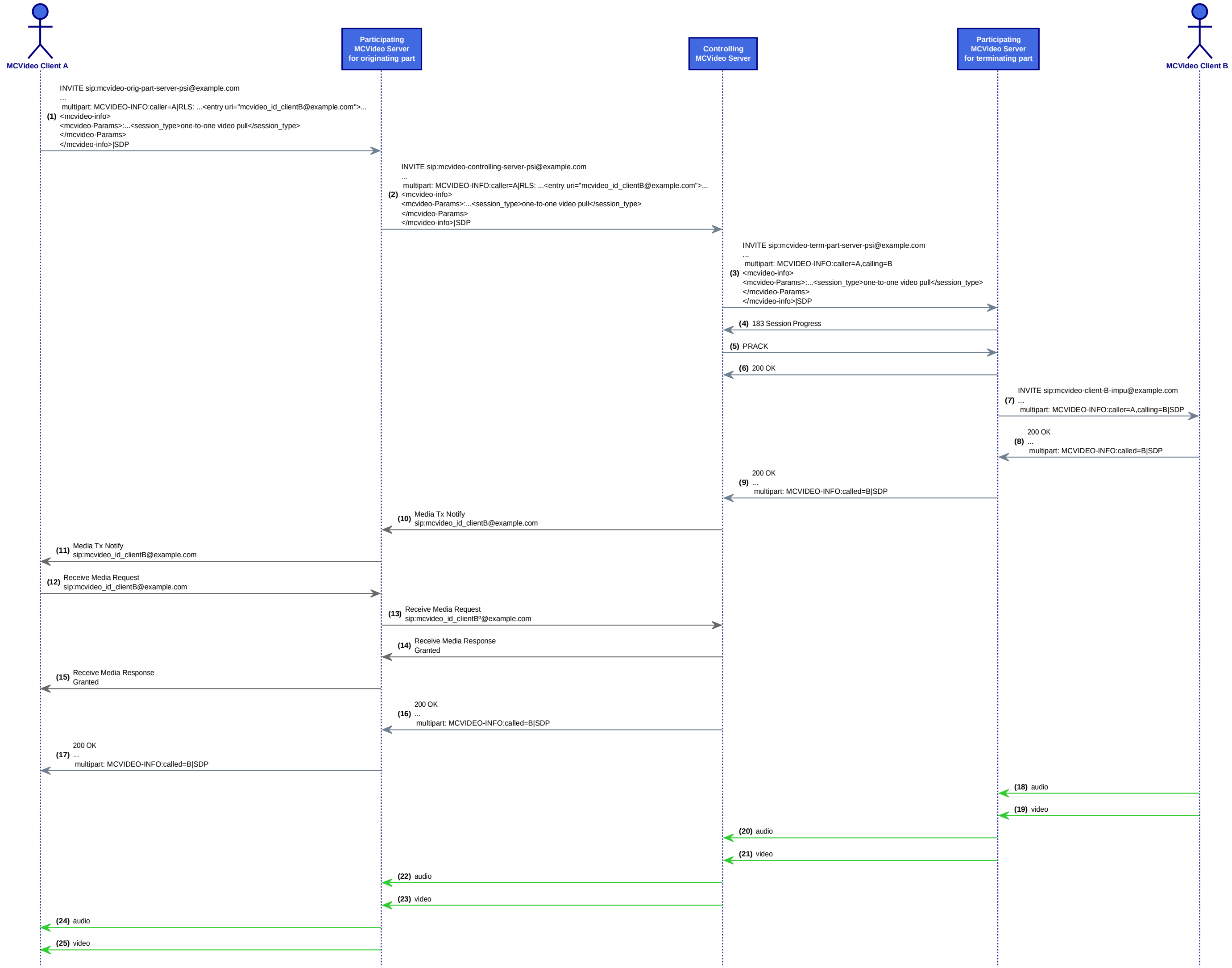

Figure 62ae: CONN-MCVIDEO/ONN/ONE-TO-ONE/VIDEOPULL/01 Message Sequence

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%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>
</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			
Identifier	CONN-MCVIDEO/ONN/ONE-TO-ONE/VIDEOPULL/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a one-to-one video pull		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system		
Test Sequence	**Step**	**Type**	**Description**
	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 in ETSI TS 124 281 [7], 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

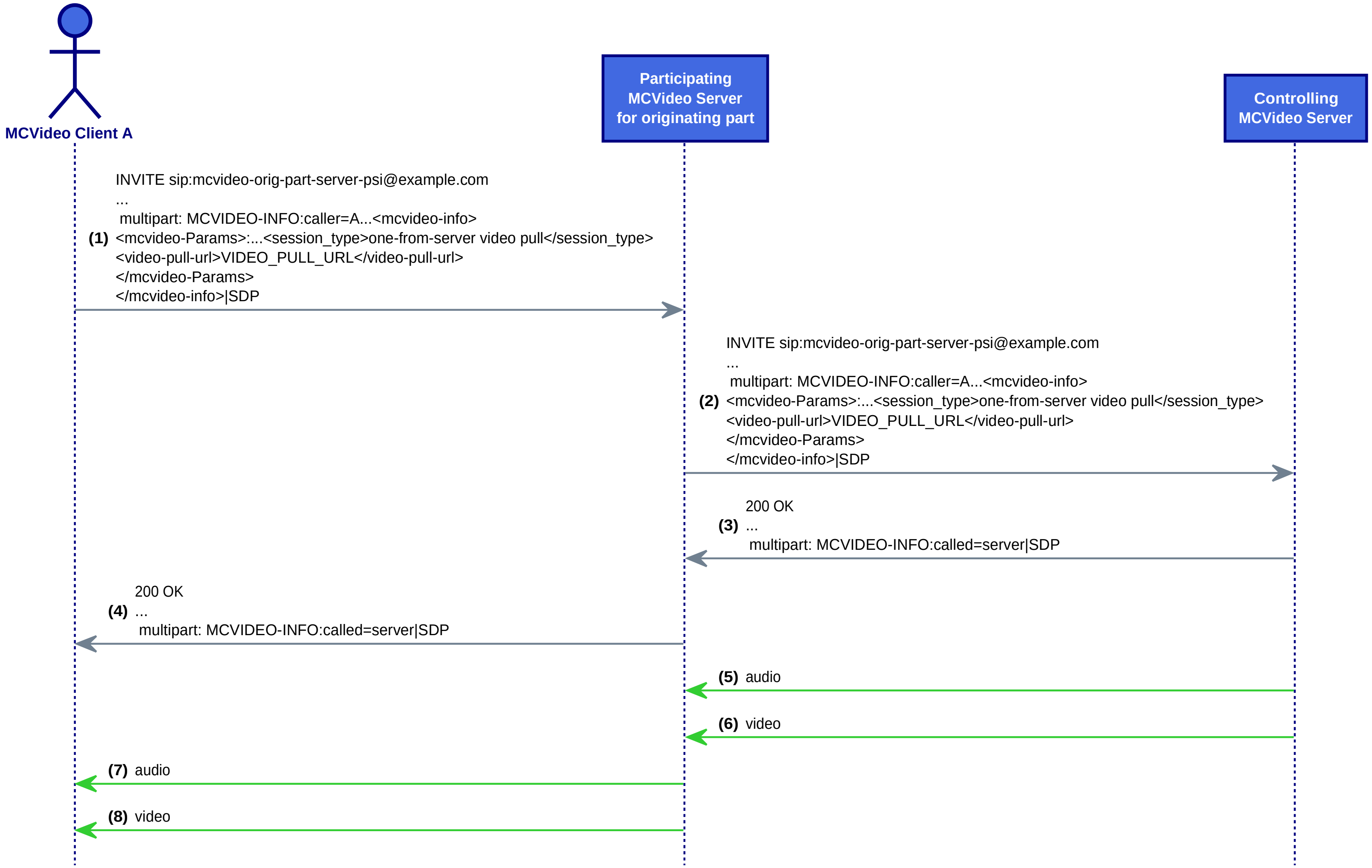

Figure 62af: CONN-MCVIDEO/ONN/ONE-FROM-SERVER/VIDEOPULL/01 Message Sequence

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			
Identifier	CONN-MCVIDEO/ONN/ONE-FROM-SERVER/VIDEOPULL/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a one-from-server video pull		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system		
Test Sequence	**Step**	**Type**	**Description**
	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 in ETSI TS 124 281 [7], 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 ETSI TS 124 581 [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

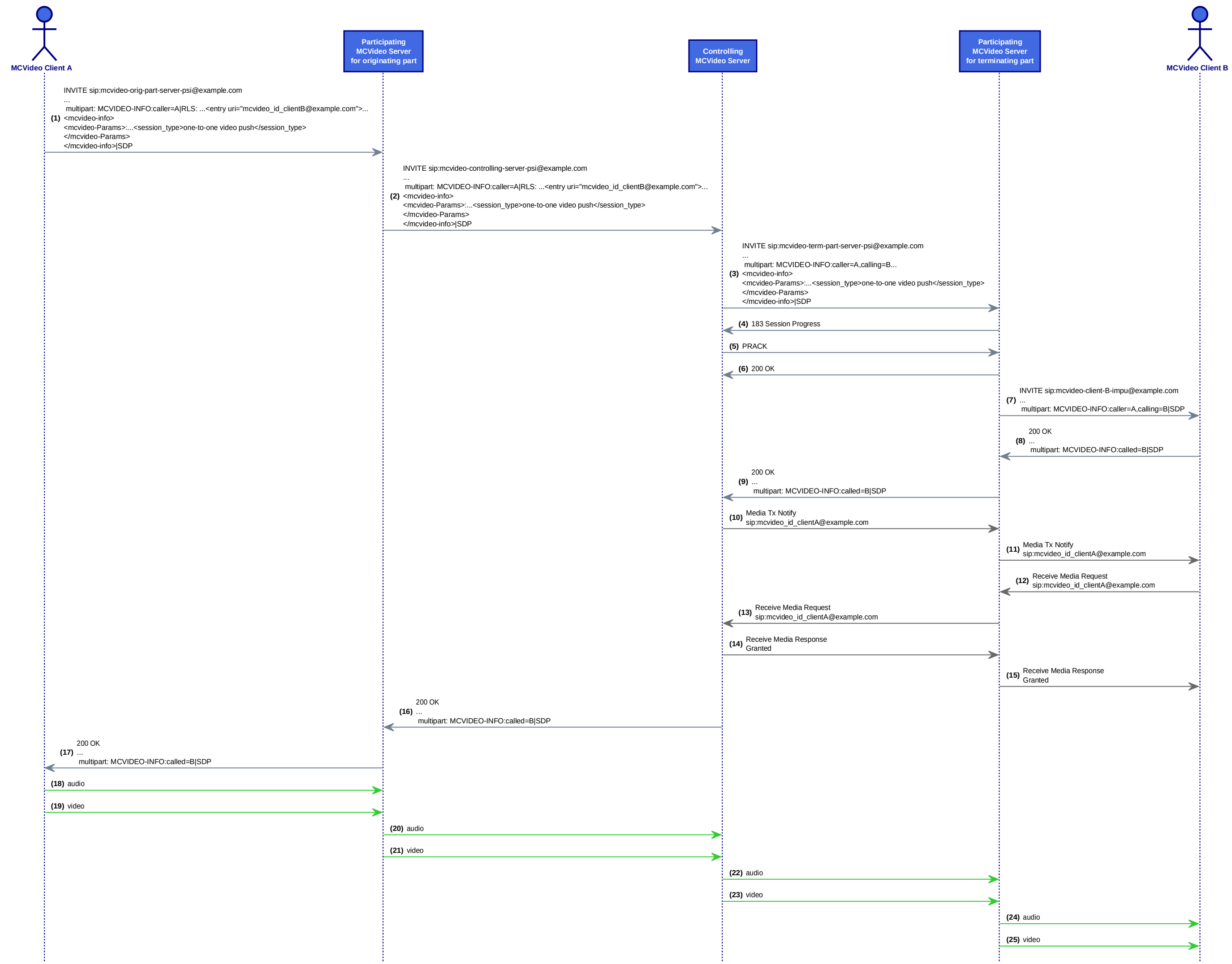

Figure 62ag: CONN-MCVIDEO/ONN/ONE-TO-ONE/VIDEOPUSH/01 Message Sequence

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%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 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			
Identifier	CONN-MCVIDEO/ONN/ONE-TO-ONE/VIDEOPUSH/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a one-to-one video push		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system		
Test Sequence	**Step**	**Type**	**Description**
	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 in ETSI TS 124 281 [7], 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

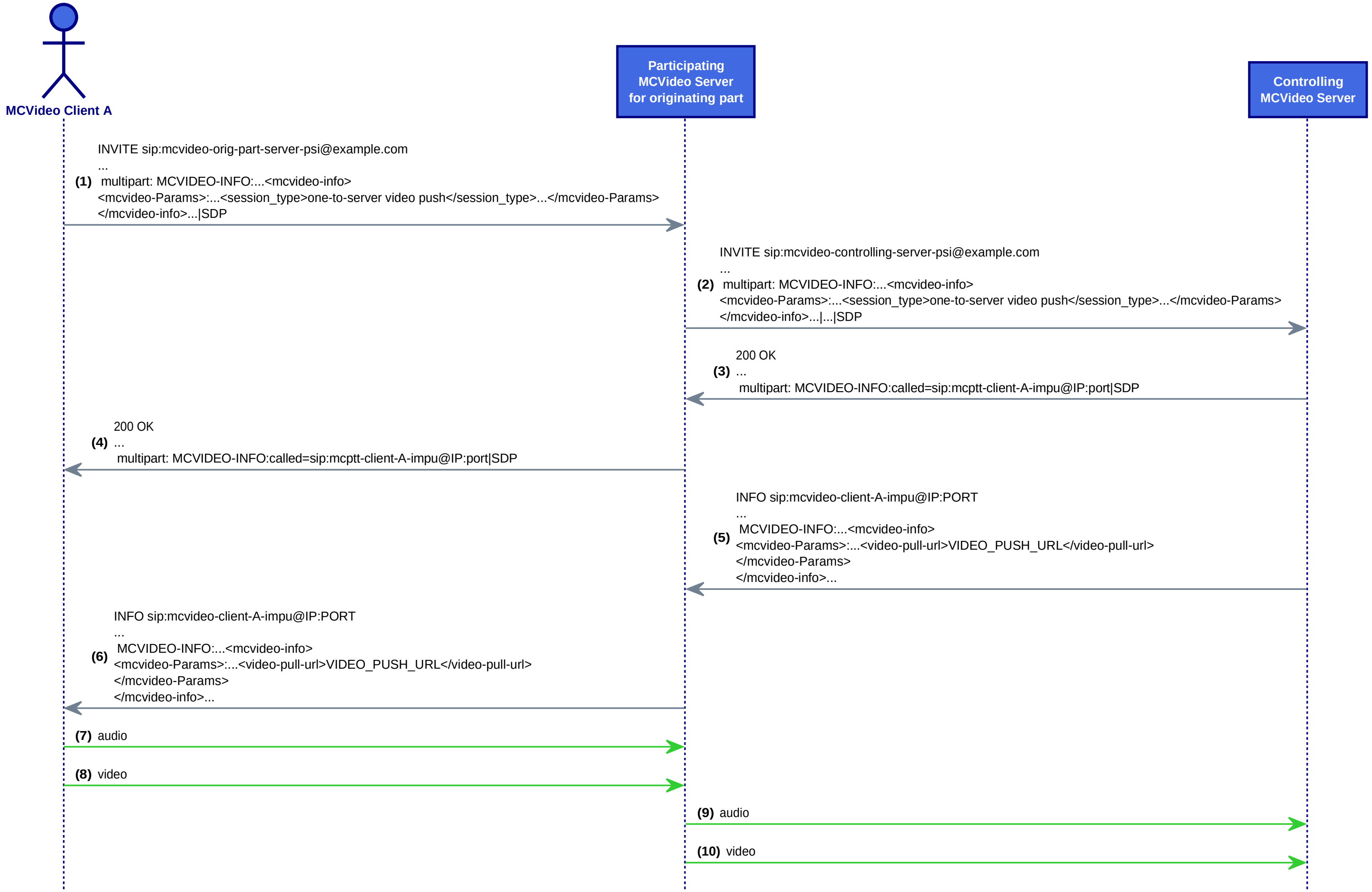

Figure 62ah: CONN-MCVIDEO/ONN/ONE-TO-SERVER/VIDEOPUSH/01 Message Sequence

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%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 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			
Identifier	CONN-MCVIDEO/ONN/ONE-TO-SERVER/VIDEOPUSH/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a one-from-server video pull		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system		
Test Sequence	**Step**	**Type**	**Description**
	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 in ETSI TS 124 281 [7]) emergency alert to the indicated MCVideo group upon receiving a request from the MCVideo shall generate, according to clause 12.2.1.1 in ETSI TS 124 281 [7]) 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 in ETSI TS 124 281 [7]), upon checking the identity and authorization of the MCVideo user, will forward the message to the controlling (clause 11.2.3.1 in ETSI TS 124 281 [7]) 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 in ETSI TS 124 281 [7] with the clarifications of clause 6.3.3.1.12 in ETSI TS 124 281 [7] 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 in ETSI TS 124 281 [7] 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

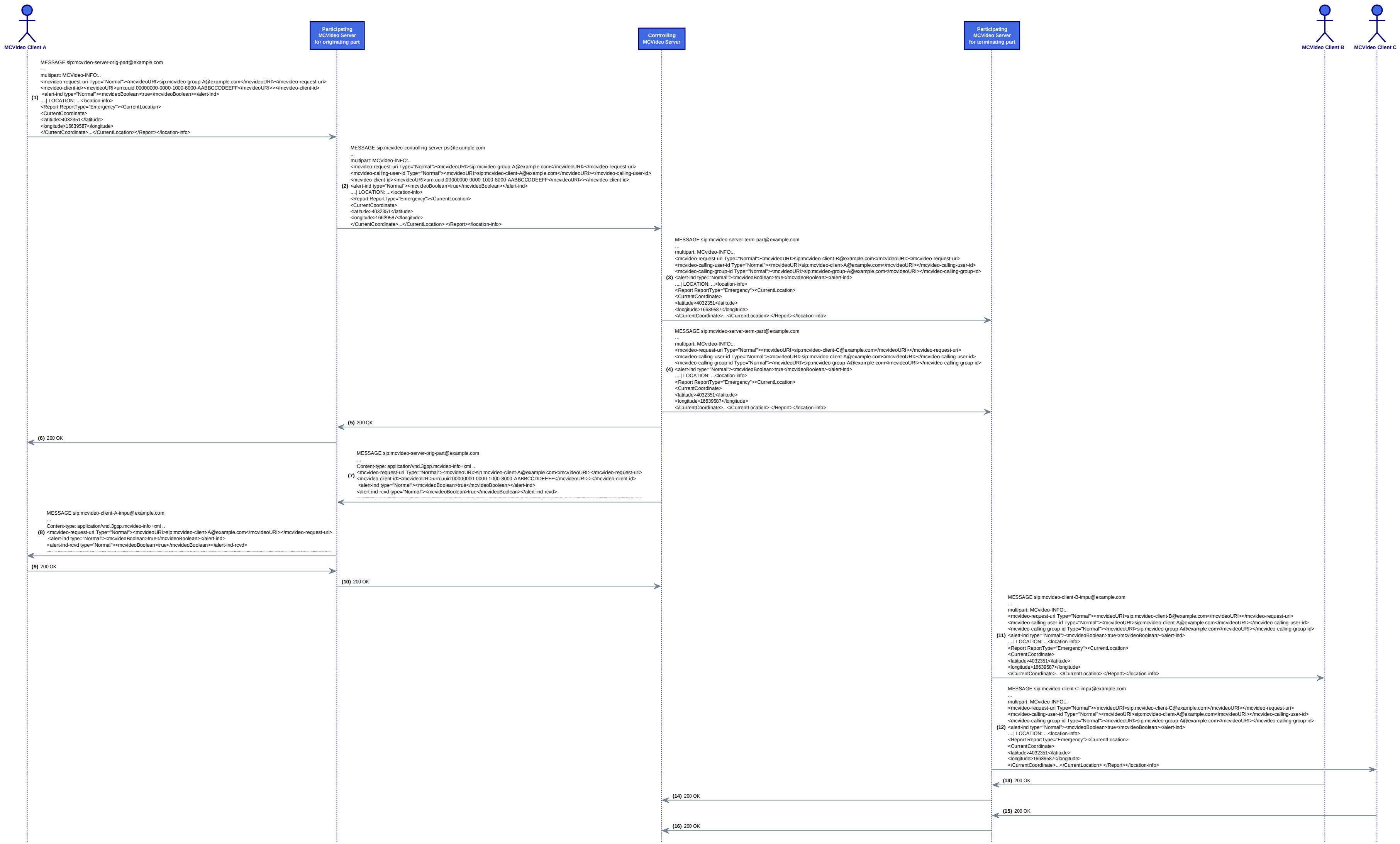

Figure 62ai: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 71ai: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/01 ITD

Interoperability Test Description			
Identifier	CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for a Group Call that is upgraded to Emergency		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system and users properly affiliated to the called chat group		
Test Sequence	**Step**	**Type**	**Description**
	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 in ETSI TS 124 281 [7]. 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 in ETSI TS 124 281 [7]) will forward the message to the controlling. The controlling server (clause 11.2.3.2 in ETSI TS 124 281 [7]) 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 in ETSI TS 124 281 [7] 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

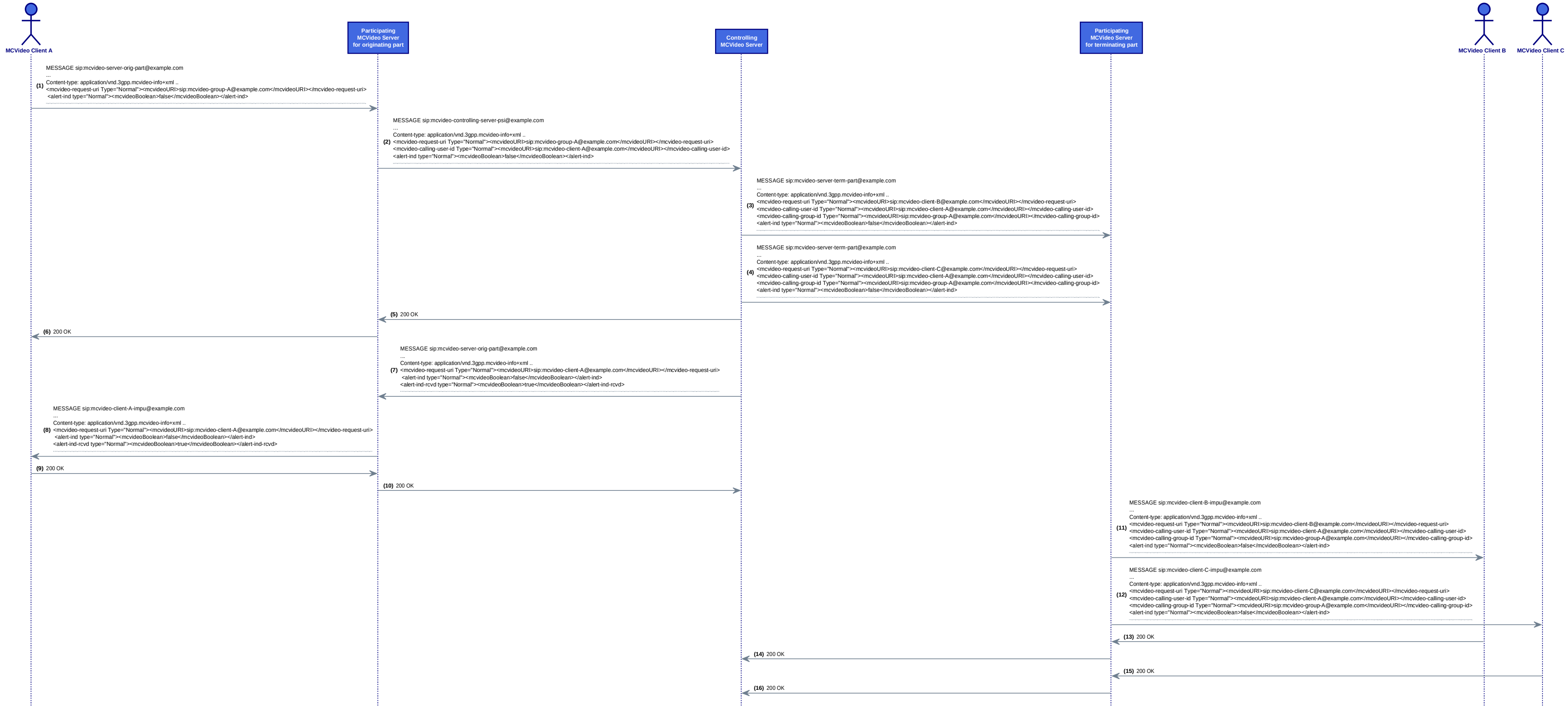

Figure 62aj: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71aj: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/02 ITD

Interoperability Test Description			
Identifier	CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for the cancellation of an emergency alert		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system and users properly affiliated to the called chat group • User 1 had sent emergency alert state		
Test Sequence	**Step**	**Type**	**Description**
	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 is 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 clause 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

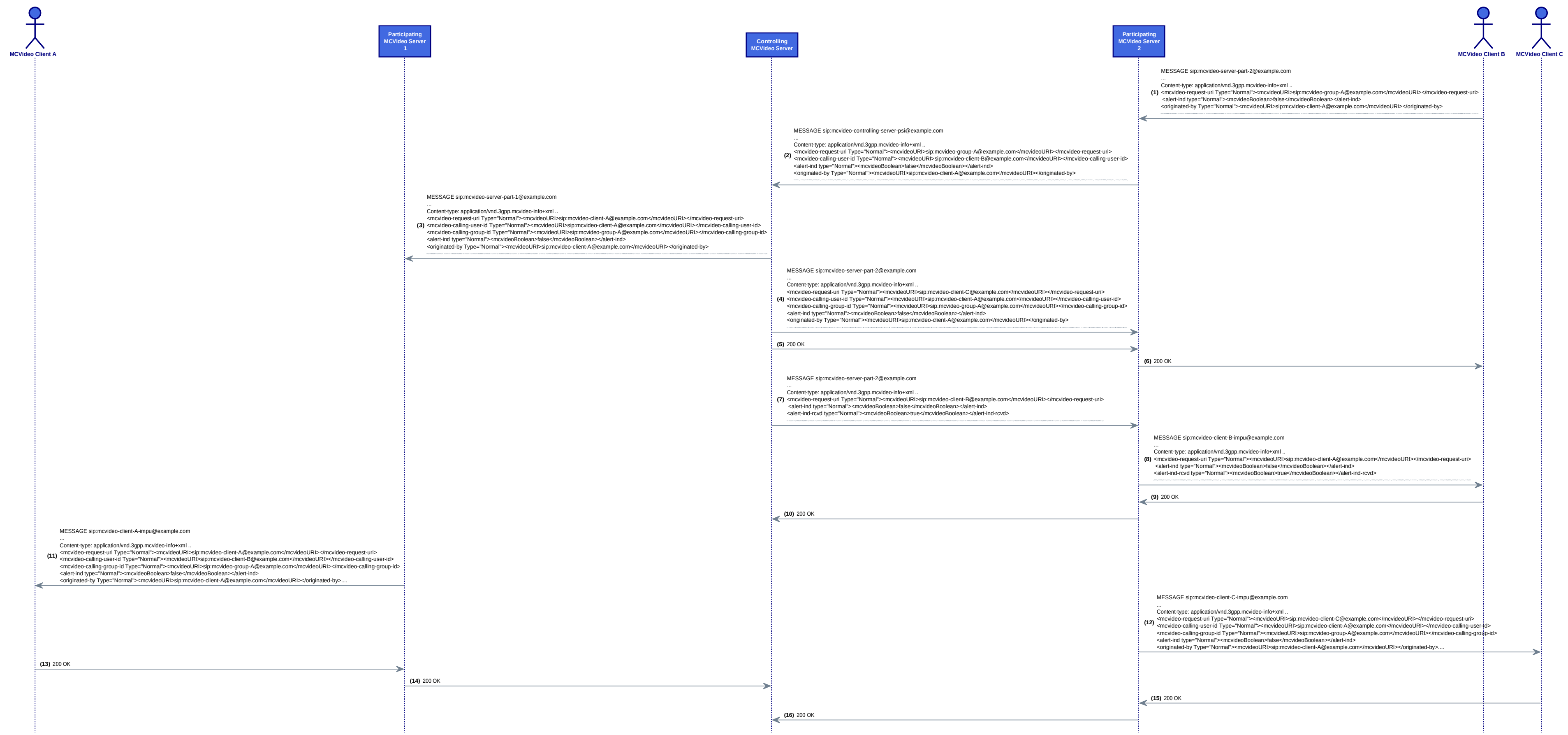

Figure 62ak: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/03 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71ak: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/03 ITD

Interoperability Test Description			
Identifier	CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for the cancellation of an emergency alert originated by another user		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system and users properly affiliated to the called chat group • User 1 had sent an emergency alert		
Test Sequence	**Step**	**Type**	**Description**
	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 in 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 ETSI TS 124 379 [9], in the client side (clause 12.1.1.4 in ETSI TS 124 379 [9]) no procedure is explicitly triggered (but it is when leaving).

NOTE 2: An inconsistency has been identified in clause 6.3.3.1.22 in ETSI TS 124 379 [9] regarding the value of mcptt-request-uri being either the MCPTT ID of the user or the group ID.

Message Sequence Diagram

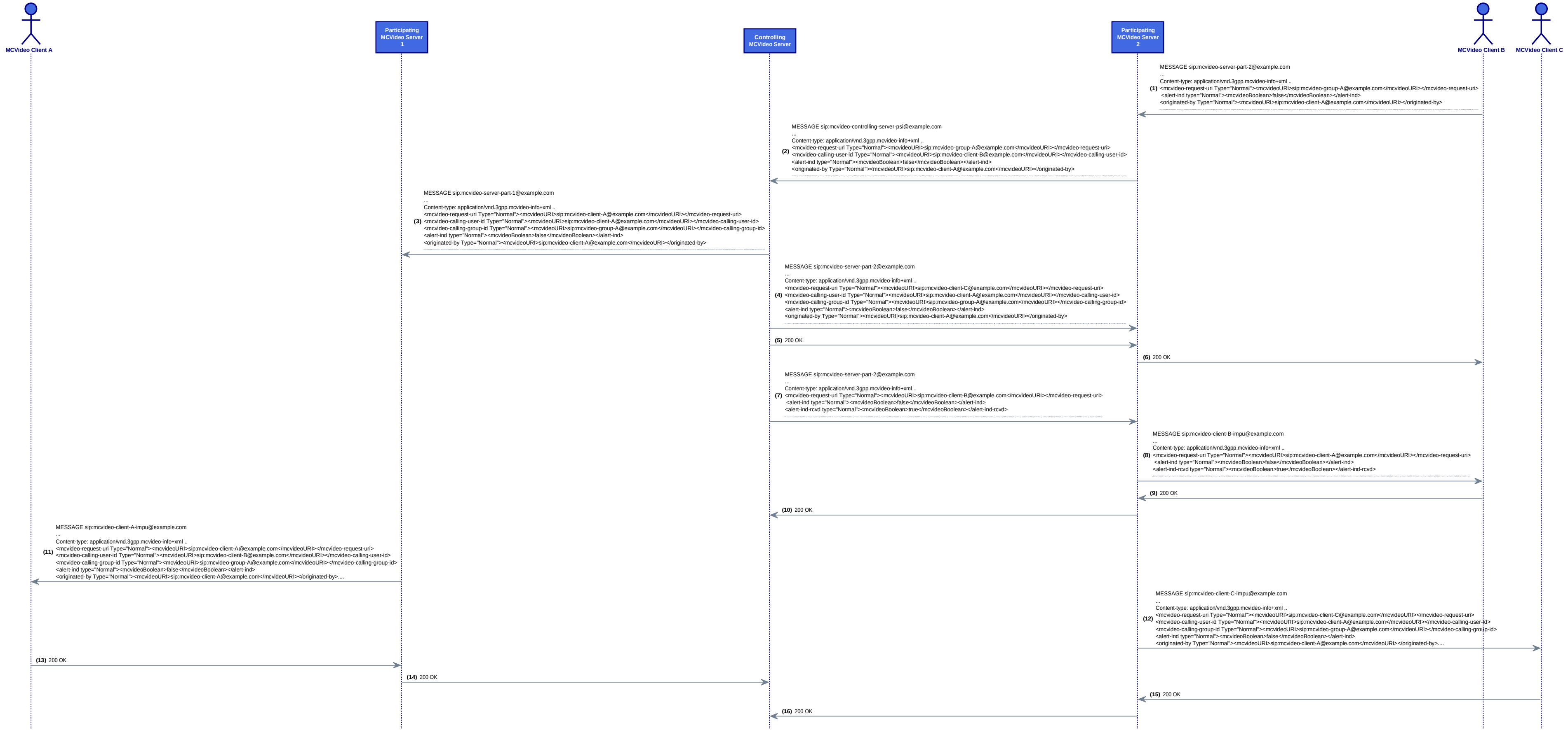

Figure 62al: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/04 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71al: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/04 ITD

Interoperability Test Description			
Identifier	CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/04		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for the cancellation of an emergency alert originated by another user		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system and users properly affiliated to the called chat group • User 1 had sent an emergency alert		
Test Sequence	**Step**	**Type**	**Description**
	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"

7.2.97 Participating checks the status of the functional alias during the setup an on-demand prearranged MCPTT Group Call [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/10]

As defined in clause 10.1.1.2.1.1 in ETSI TS 124 379 [9] when the MCPTT client is aware of active functional aliases (which functional aliases are activated for an MCPTT ID are learned from procedures specified in clause 9A.2.1.3 in ETSI TS 124 379 [9]), then an active functional alias is to be included in the initial SIP INVITE request by setting the <functional-alias-URI> node to the URI of the used functional alias.

NOTE: <functional-alias-URI> is under the anyExt node of the mcptt-info XSD and therefore not explicitly included in the XSD. In clauses F.1.3 and F.1.4 in ETSI TS 124 379 [9] it is defined as "a <functional-alias-URI> of type "mcpttinfo:contentType" set to a value of the functional alias that is used together with the "mcptt-calling-user-id"" but also in several section the use of some URI is stated (i.e. "with the <functional-alias-URI> set to the URI of the used functional alias").

Later, when processed by the participating function according to clause 10.1.1.3.1.1 in ETSI TS 124 379 [9], "if the received SIP request contains a <functional-alias-URI> element of the application/vnd.3gpp.mcptt-info+xml MIME body, then check if the status of the functional alias is activated for the MCPTT ID" then "If the functional alias status is activated, then set the <functional-alias-URI> element of the application/vnd.3gpp.mcptt-info+xml MIME body in the outgoing SIP INVITE request to the received value," but "if the status is unequal activated then it will not include a <functional-alias-URI> element".

This test case will consider the first option and evaluate the specific mechanism to check the status of the functional alias in clause 9A.2.2.2.7 in ETSI TS 124 379 [9].

Note that in the callee according to clause 10.1.2.2.1.6 step 14 in ETSI TS 124 379 [9]) "if the received SIP INVITE request contains an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcpttinfo> element containing an <mcptt-Params> element which includes a <functional-alias-URI> element" the MCPTT client "may display to the MCPTT user the functional alias of the inviting MCPTT user".

Message Sequence Diagram

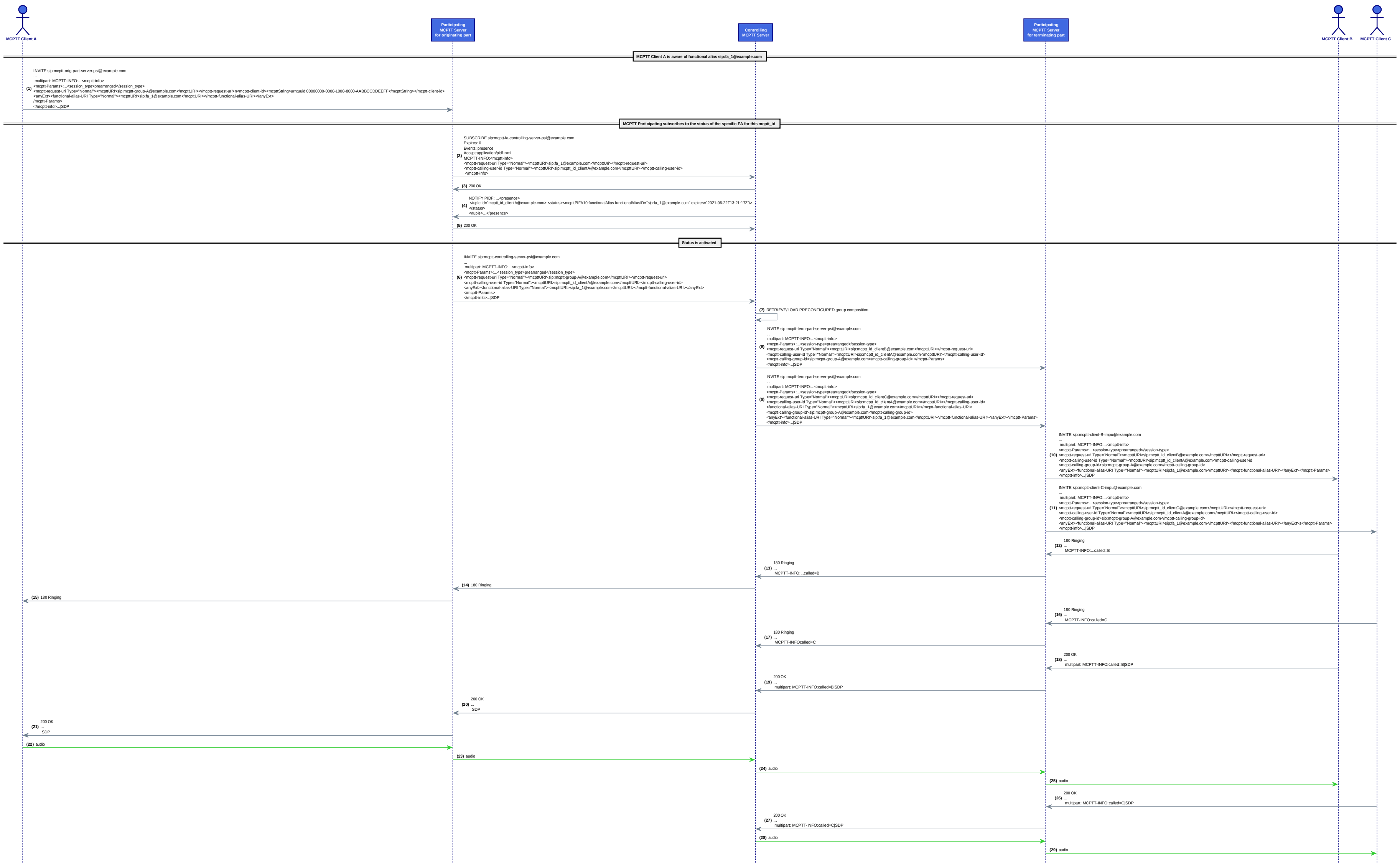

Figure 62am: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/10 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71am: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/10 ITD

Interoperability Test Description			
Identifier	CONN/ONN/GROUP/PREA/ONDEM/NFC/10		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call where the participating checks the status of FA		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity - among all elements of the specific scenario • 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 • Calling user is affiliated to the called group • MCPTT Client A has activated sip:fa_1@example.com FA		
Test Sequence	**Step**	**Type**	**Description**
	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 including a <functional-alias-URI> element set to the FA
	3	check	The MCPTT participating server subscribes to the status of the FA for the mcptt id in the <mcptt-calling-user-id> to the controlling (assuming it owns the FA)
	4	check	The MCPTT participating receives the NOTIFY with the status of the FA indicating it is active for the calling mcptt id
	5	check	The MCPTT participating forwards the INVITE keeping the <functional-alias-URI> element of the <mcpttinfo> in the outgoing SIP request
	6	check	The MCPTT controlling server receives the INVITE
	7	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
	8	check	"n" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	9	check	"n" INVITEs received at the affiliated mcptt_id_clientX
	10	check	"n" SIP dialogs established
	11	verify	Call connected, multiple media flows exchanged and received FA in the <functional-alias-URI> of the calling user shown in the clients
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

7.2.98 Participating checks the status of the functional alias during the setup of an on-demand Chat Group Call [CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/06]

As defined in clause 10.1.2.2.1.1 in ETSI TS 124 379 [9] "when the MCPTT client is aware of active functional aliases, then an active functional alias is to be included in the initial SIP INVITE request by setting the <functional-alias-URI> node to the URI of the used functional alias".

Later, when processed by the participating function according to clause 10.1.2.3.1.1 in ETSI TS 124 379 [9], "11a) if the received SIP request contains a <functional-alias-URI> element of the application/vnd.3gpp.mcptt-info+xml MIME body, then check if the status of the functional alias is activated for the MCPTT ID" then "If the functional alias status is activated, then set the <functional-alias-URI> element of the application/vnd.3gpp.mcptt-info+xml MIME body in the outgoing SIP INVITE request to the received value," but "if the status is unequal activated then it will not include a <functional-alias-URI> element".

This test case will consider the first option and evaluate the specific mechanism to check the status of the functional alias in clause 9A.2.2.2.7 in ETSI TS 124 379 [9].

NOTE: The only reference for an INVITE arriving at the callee for chat group calls is in clause 10.1.2.2.1.6 in ETSI TS 124 379 [9], "MCPTT client receives a SIP INVITE request for an MCPTT group call", which is only used for MCPTT emergency and MCPTT imminent peril calls when the MCPTT client is affiliated but not joined to the chat group. Therefore this would be the only case where the MCPTT client "may display to the MCPTT user the functional alias of the inviting MCPTT user".

Message Sequence Diagram

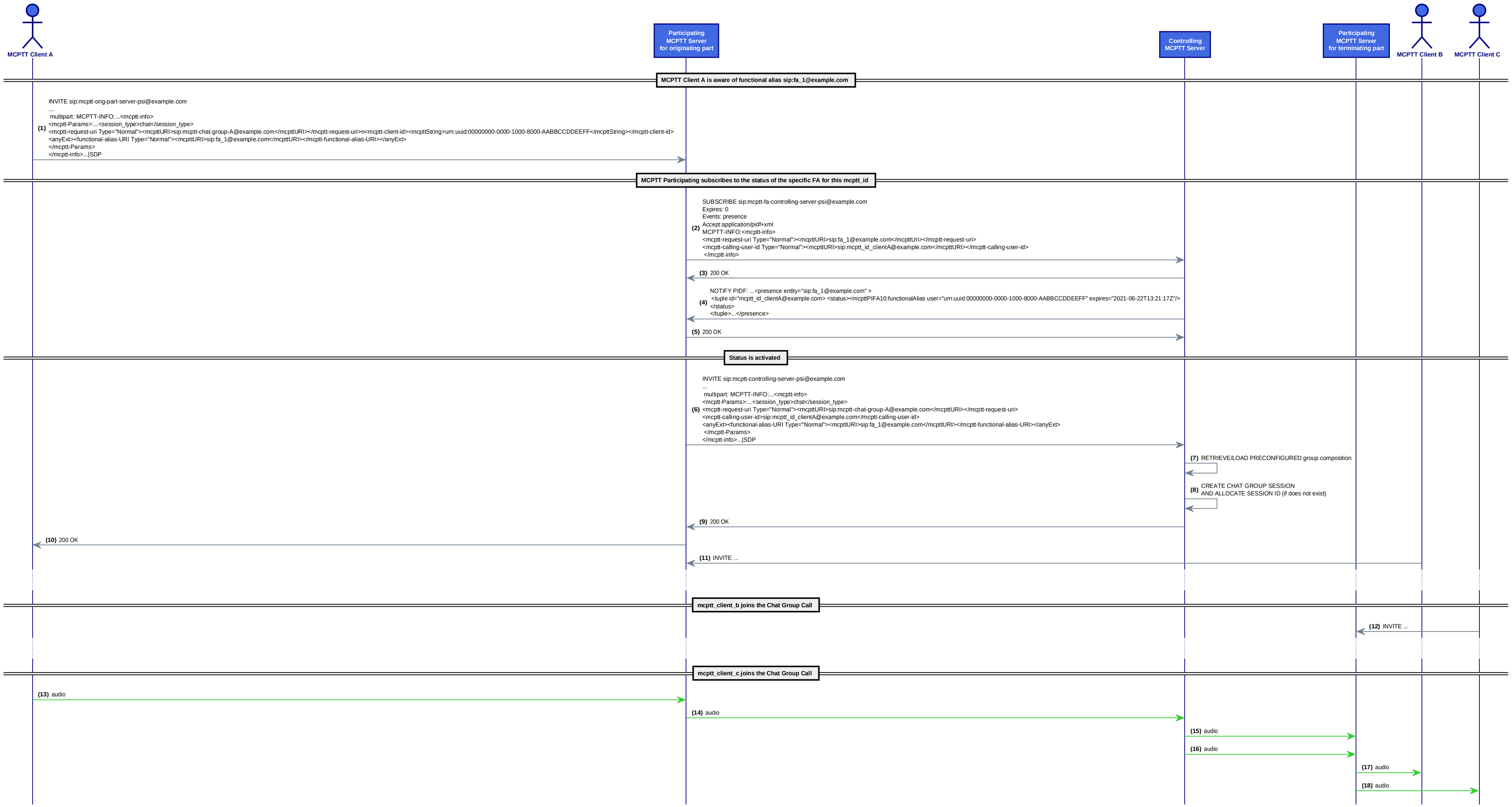

Figure 62an: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/06 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71an: CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/NFC/06 ITD

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">CONN/GROUP/CHAT/ONDEM/NFC/06</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of an on-demand Chat Group Call where the participating checks the status of FA</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL
• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)
• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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 and users properly affiliated to the called chat group
• MCPTT Client A has activated sip:fa_1@example.com FA</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="10">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>User 1 (mcptt_id_clientA@example.com) calls mcptt-chat-group-A</td></tr>
<tr><td>2</td><td>check</td><td>Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS including a <functional-alias-URI> element set to the FA</td></tr>
<tr><td>3</td><td>check</td><td>The MCPTT participating server subscribes to the status of the FA for the mcptt id in the <mcptt-calling-user-id> to the controlling (assuming it owns the FA)</td></tr>
<tr><td>4</td><td>check</td><td>The MCPTT participating receives the NOTIFY with the status of the FA indicating it is active for the calling mcptt id</td></tr>
<tr><td>5</td><td>check</td><td>The MCPTT participating forwards the INVITE keeping the <functional-alias-URI> element of the <mcpttinfo> in the outgoing SIP request</td></tr>
<tr><td>6</td><td>check</td><td>INVITE received at the MCPTT controlling server</td></tr>
<tr><td>7</td><td>check</td><td>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</td></tr>
<tr><td>8</td><td>check</td><td>Users 2 and 3 repeat the same procedure</td></tr>
<tr><td>9</td><td>verify</td><td>Call connected and multiple media flows exchanged (NOTE that no FA information will be displayed unless the very specific conditions mentioned above are met -not in this TC-)</td></tr>
</table>

7.2.99 Participating checks the status of the functional alias during the setup of on-demand private MCPTT call in automatic commencement model with floor control [CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/03]

As defined in clause 11.1.1.2.1.1 in ETSI TS 124 379 [9] Step 14 "c) shall contain an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcpttinfo> element containing the <mcptt-Params> element: i) with the <session-type> element set to a value of "private"; and ii) if the MCPTT client needs to include an active functional alias in the initial SIP INVITE request, with the <functional-alias-URI> set to the URI of the used functional alias".

Later, when processed by the participating function according to clause 11.1.1.3.1.1 in ETSI TS 124 379 [9], "19a) if the received SIP INVITE request contains a <functional-alias-URI> element of the application/vnd.3gpp.mcptt-info+xml MIME body" then "shall check if the status of the functional alias is activated for the MCPTT ID. If the functional alias status is activated, then the participating MCPTT function shall set the <functional-alias-URI> element of the application/vnd.3gpp.mcptt-info+xml MIME body in the outgoing SIP INVITE request to the received value". otherwise "shall not include a <functional-alias-URI> element".

This test case will consider the first option and evaluate the specific mechanism to check the status of the functional alias in clause 9A.2.2.2.7 in ETSI TS 124 379 [9].

Message Sequence Diagram

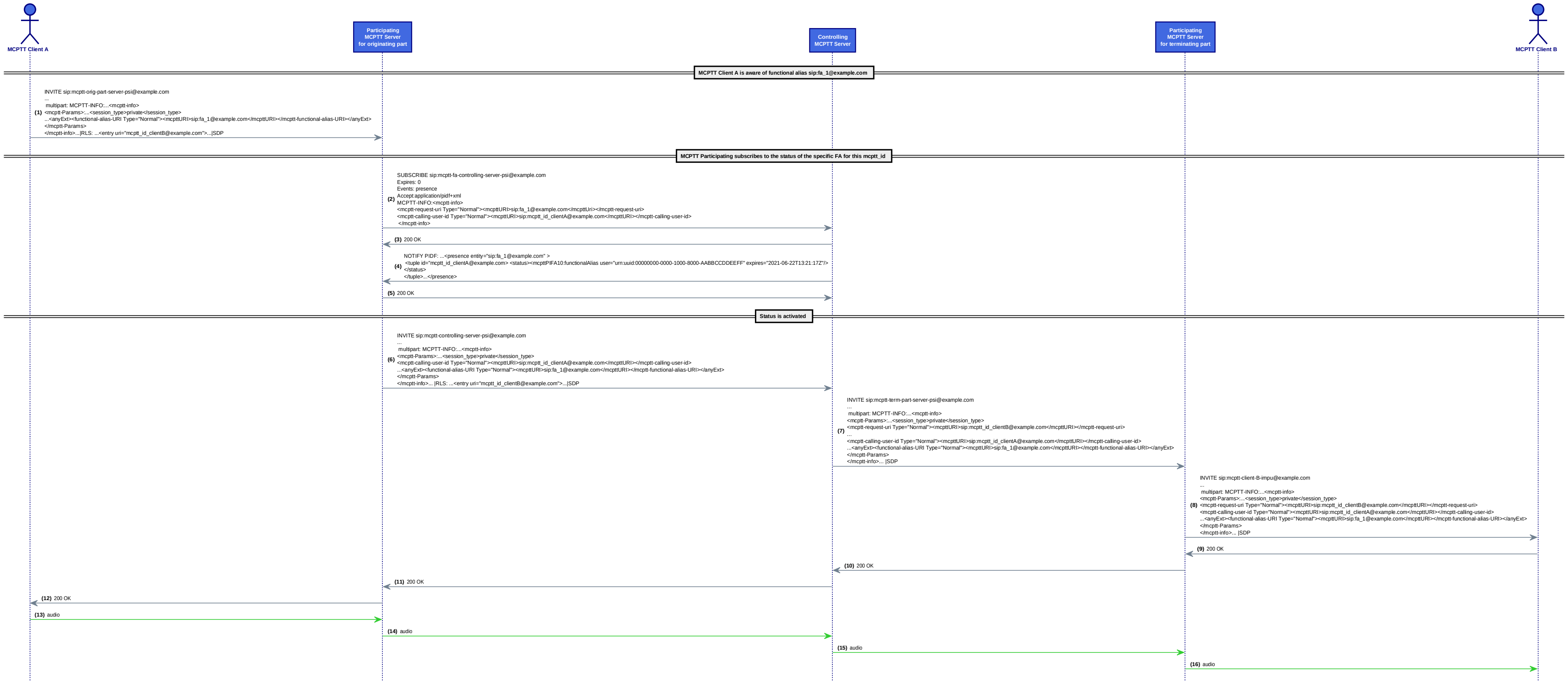

Figure 62ao: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/03 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71ao: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/03 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with automatic commencement mode where the participating checks the status of FA		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • MCPTT Client A has activated sip:fa_1@example.com FA		
Test Sequence	**Step**	**Type**	**Description**
	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 mcptt_id_clientA@example.com after traversing SIP core/IMS including a <functional-alias-URI> element set to the FA
	3	check	The MCPTT participating server subscribes to the status of the FA for the mcptt id in the <mcptt-calling-user-id> to the controlling (assuming it owns the FA)
	4	check	The MCPTT participating receives the NOTIFY with the status of the FA indicating it is active for the calling mcptt id.
	5	check	The MCPTT participating forwards the INVITE keeping the <functional-alias-URI> element of the <mcpttinfo> in the outgoing SIP request.
	6	check	The controlling server check permissions and forward the INVITE to the participating server of the callee
	7	check	Upon arrival of the INVITE adapted by the terminating participating function at User 2 the call is automatically taken
	8	verify	Call connected, media flows exchanged and received FA in the <functional-alias-URI> of the calling user shown in the client

7.2.100 Participating checks the status of the functional alias during the setup of an on-demand first-to-answer MCPTT call with floor control [CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/02]

Similarly to CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/03 and as defined in clause 11.1.1.2.1.1 in ETSI TS 124 379 [9] Step 15: "c) if the MCPTT client needs to include an active functional alias in the initial SIP INVITE request, with the <functional-alias-URI> set to the URI of the used functional alias".

Later, when processed by the participating function according to clause 11.1.1.3.1.1 in ETSI TS 124 379 [9], "19a) if the received SIP INVITE request contains a <functional-alias-URI> element of the application/vnd.3gpp.mcptt-info+xml MIME body" then "shall check if the status of the functional alias is activated for the MCPTT ID. If the functional alias status is activated, then the participating MCPTT function shall set the <functional-alias-URI> element of the application/vnd.3gpp.mcptt-info+xml MIME body in the outgoing SIP INVITE request to the received value". otherwise "shall not include a <functional-alias-URI> element".

This test case will consider the first option and evaluate the specific mechanism to check the status of the functional alias in clause 9A.2.2.2.7 in ETSI TS TS 124 379 [9].

NOTE: In this test case the functional-alias-URI checking is included only. Therefore, the destination of the first-to-answer call is still a set of MCPTT IDs (not a FA).

Message Sequence Diagram

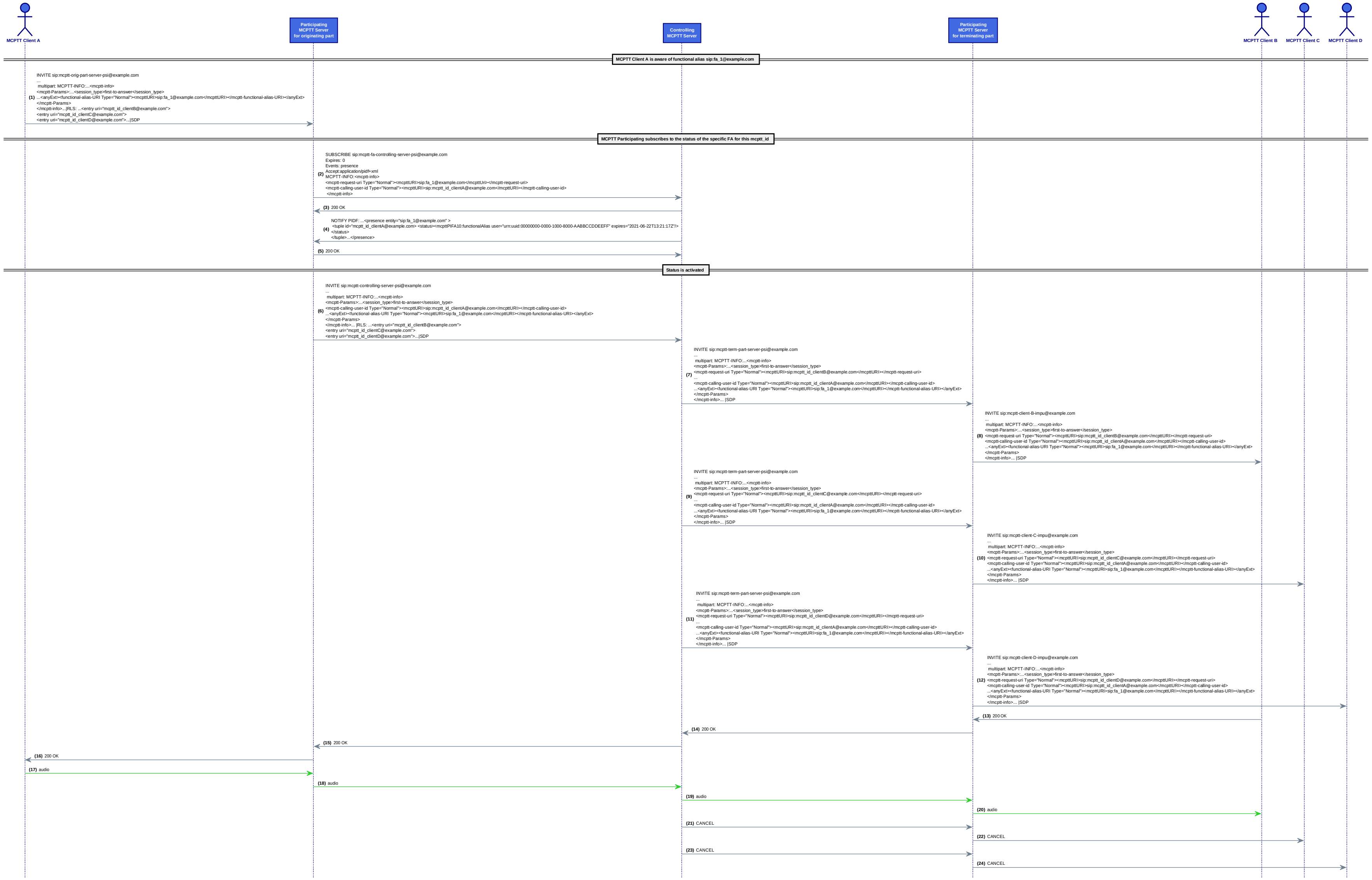

Figure 62ap: CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71ap: CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/02 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call where the participating checks the status of FA		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • MCPTT Client A has activated sip:fa_1@example.com FA		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls a list of users (User 2, 3, 4, etc.) (mcptt_id_clientB,C,D...@example.com)
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS including a <functional-alias-URI> element set to the FA
	3	check	The MCPTT participating server subscribes to the status of the FA for the mcptt id in the <mcptt-calling-user-id> to the controlling (assuming it owns the FA)
	4	check	The MCPTT participating receives the NOTIFY with the status of the FA indicating it is active for the calling mcptt id.
	5	check	The MCPTT participating forwards the INVITE keeping the <functional-alias-URI> element of the <mcpttinfo> in the outgoing SIP request.
	6	check	The controlling server check permissions and forward the INVITE to the participating server(s) of the callee(s)
	7	check	Upon arrival of the INVITE adapted by the terminating participating function to the terminating first-to-answer Client User 2 is notified
	8	check	User 2 accepts the private call and all the signalling is completed
	9	check	Upon notification of the first-answering-callee the rest of dialogs are cancelled
	10	verify	Call connected, media flows exchanged and received FA in the <functional-alias-URI> of the calling user shown in the client

7.2.101 MCPTT User includes the FA in an on-demand first-to-answer MCPTT call with floor control using pre-established sessions [CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/02]

As defined in clause 11.1.1.2.2.1 in ETSI TS 124 379 [9] "upon receiving a request from an MCPTT user to establish an MCPTT private call within a pre-established session the MCPTT client shall generate a SIP REFER request outside a dialog"… More specifically, in Step 9) "for an initiation of a first-to-answer call, shall include in the application/resource-lists MIME body an <entry> element for each of the targeted MCPTT users, with each <entry> element containing a "uri" attribute set to the MCPTT ID of the targeted user, extended with hname "body" parameter in the headers portion of the SIP URI containing: "(NOTE specific SDP configuration omitted) ... an application/vnd.3gpp.mcptt-info MIME body with the <session-type> element set to "first-to-answer".

Additionally in clause 6.3.2.1.4 in ETSI TS 124 379 [9] it is mentioned for the participating that "11A) if the application/vnd.3gpp.mcptt-info+xml MIME body included in the outgoing SIP INVITE request contains a <functional-alias-URI> element, shall check the status of the functional alias. If the status is not active, then the participating MCPTT function shall remove the <functional-alias-URI> element from the application/vnd.3gpp.mcptt-info+xml MIME body". However in aforementioned clause 11.1.1.2.2.1 in ETSI TS 124 379 [9] the reference to <functional-alias-URI> is under the private call step only - step 8), c), ii), B)- and not in step 9.

Message Sequence Diagram

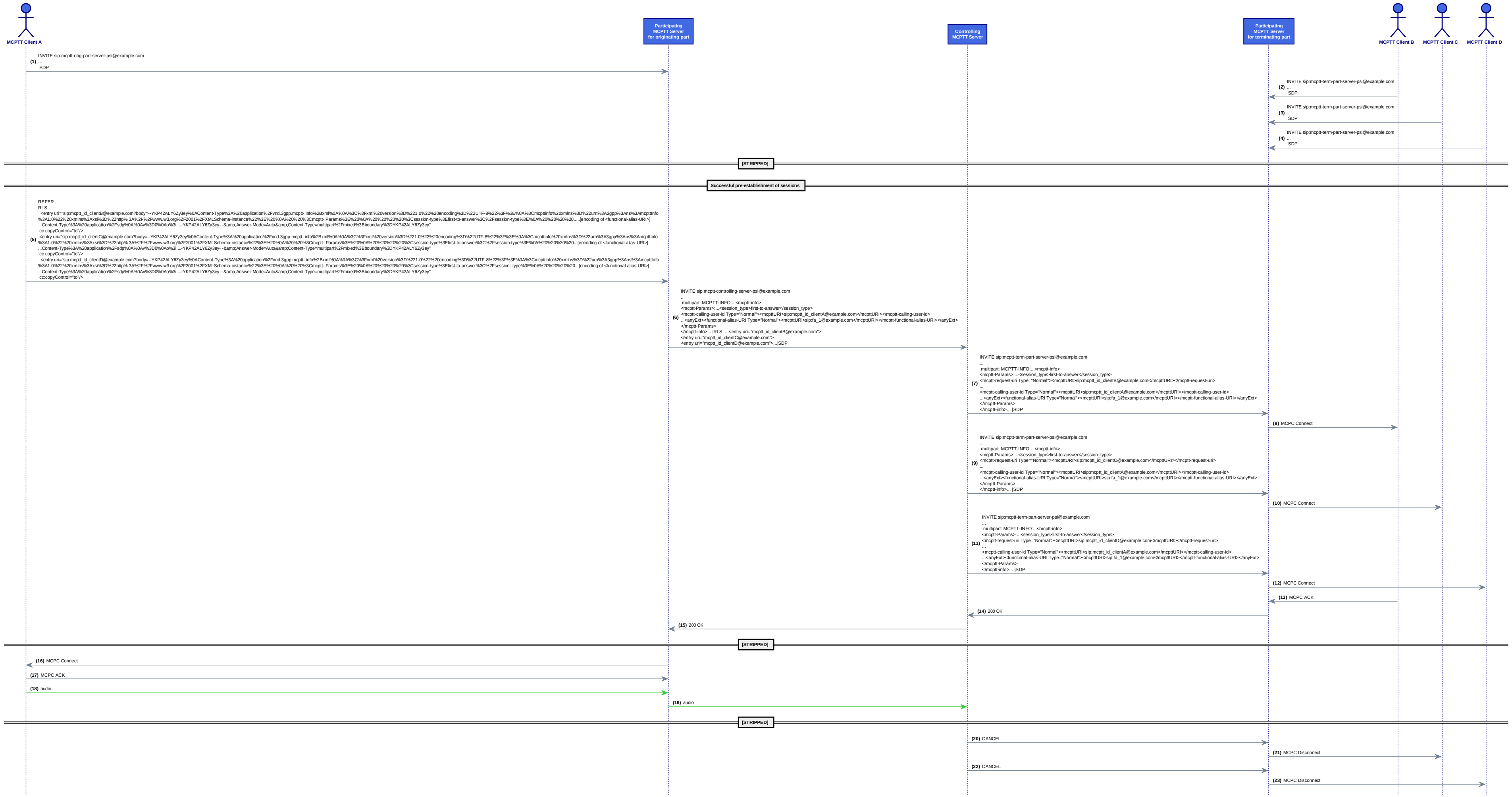

Figure 61aq: CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71aq: CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/02 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call where the Client includes the FA in <functional-alias-URI>		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • MCPTT Client A has activated sip:fa_1@example.com FA		
Test Sequence	**Step**	**Type**	**Description**
	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) and includes <functional-alias-URI>
	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, media flows exchanged and FA displayed

7.2.102 MCPTT User includes the FA in an on-demand private MCPTT call in automatic commencement model with floor control [CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/04]

This test case is equivalent to CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/03 but focused on the e2e behaviour rather than on verifying the participating server checking the status of the functional alias.

Message Sequence Diagram

Figure 62ar: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/04 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71ar: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/04 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/04		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with automatic commencement mode where the client of the caller includes the FA		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • MCPTT Client A has activated sip:fa_1@example.com FA		
Test Sequence	**Step**	**Type**	**Description**
	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 mcptt_id_clientA@example.com after traversing SIP core/IMS including a <functional-alias-URI> element set to the FA
	3	check	The MCPTT participating forwards the INVITE keeping the <functional-alias-URI> element of the <mcpttinfo> in the outgoing SIP request.
	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, media flows exchanged and received FA in the <functional-alias-URI> of the calling user shown in the client

7.2.103 MCPTT User calls a FA using an on-demand first-to-answer MCPTT call with floor control [CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/03]

As defined in clause 11.1.1.2.1.1 in ETSI TS 124 379 [9] Step 15) if the MCPTT user is initiating a first-to-answer call shall contain an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcpttinfo> element containing the <mcptt-Params> element with the <session-type> element set to a value of "first-to-answer" and the <call-to-functional-alias-ind> set to "true" if the MCPTT client is aware of active functional aliases and an active functional alias is to be called. As in CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/02 if the MCPTT client needs to include an active functional alias in the initial SIP INVITE request, the <mcpttinfo> will include a <functional-alias-URI> set to the URI of the used functional alias.

The participating checking/forwarding mechanism will be the same as in CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/02 (depending on whether the <functional-alias-URI> is to be included).

In the controlling, instead, and according to clause 11.1.1.4.2 in ETSI TS 124 379 [9], if the <session-type> in the received SIP INVITE request is set to "first-to-answer" and the SIP INVITE request contains an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcpttinfo> element containing the <mcptt-Params> element with the <call-to-functional-alias-ind> element set to "true", then, the controlling "shall identify the MCPTT ID(s) of the MCPTT user(s) that have activated the received functional alias by performing the actions specified in clause 9A.2.2.2.8 in ETSI TS 124 379 [9] and, upon receipt of the SIP NOTIFY request generated as specified in clause 9A.2.2.3.8 in ETSI TS 124 379 [9], shall invite the MCPTT user(s) listed in the application/pidf+xml MIME body of the SIP NOTIFY request as specified in clause 11.1.1.4.1 in ETSI TS 124 379 [9].

According to the former (clause 9A.2.2.2.8 in ETSI TS 124 379 [9]), in order to discover the MCPTT users that have successfully activated a handled functional alias, the controlling server shall generate an initial SIP SUBSCRIBE request according to ETSI TS 124 229 [6], IETF RFC 3856 [26], and IETF RFC 6665 [34] with the Request-URI set to the public service identity of the controlling MCPTT function owning the functional alias, the <mcptt-request-uri> element set to the handled functional alias ID and including an application/simple-filter+xml MIME body indicating per-functional alias restrictions of presence event package notification information indicating the served functional alias (among other elements).

As clause 9A.2.2.3.8 in ETSI TS 124 379 [9] describes, the controlling owning the functional alias shall generate an application/pidf+xml MIME body indicating per-functional alias information according to clause 9A.3.1 in ETSI TS 124 379 [9] and the served list of the served MCPTT user information entry of the functional alias information entry and send a SIP NOTIFY request according to ETSI TS 124 229 [4], and IETF RFC 6665 [26] for the subscription created in clause 9A.2.2.3.7 in ETSI TS 124 379 [9].

Message Sequence Diagram

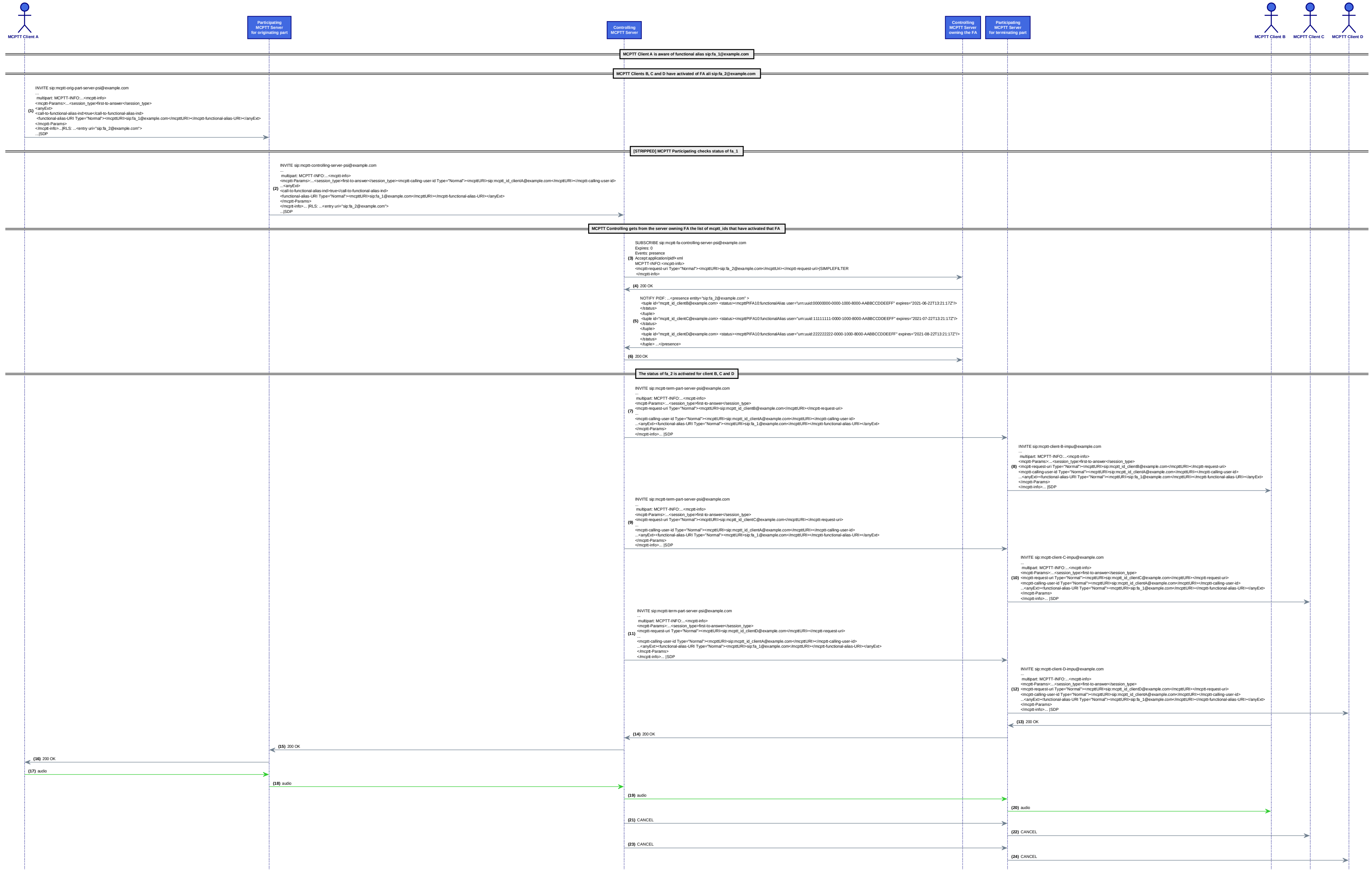

Figure 62as: CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/03 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71as: CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/03 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call to a functional alias		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • MCPTT Client A has activated sip:fa_1@example.com FA • MCPTT Clients B, C, D have activated sip:fa_2@example.com FA		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls a functional alias sip:fa_2
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS including a <functional-alias-URI> element set to the FA
	3	check	-Stripped-The MCPTT participating checks fa_1 and forwards the INVITE to the controlling keeping the <functional-alias-URI> element of the <mcpttinfo> in the outgoing SIP request
	4	check	The controlling sends a SUBSCRIBE to the controlling owning the target FA (fa_2) to check which mcptt_ids have activated it
	5	check	The controlling owning the FA sends a NOTIFY back with the list of users
	6	check	The controlling server creates an INVITE per each of the users that have activated the target FA
	7	check	Upon arrival of the INVITE adapted by the terminating participating function to the terminating first-to-answer Client User 2 is notified
	8	check	User 2 accepts the private call and all the signalling is completed
	9	check	Upon notification of the first-answering-callee the rest of dialogs are cancelled
	10	verify	Call connected, media flows exchanged and received FA in the <functional-alias-URI> of the calling user -if present- shown in the client

7.2.104 MCPTT User calls a FA using an on-demand first-to-answer MCPTT call without floor control [CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WOFC/02]

This test case is equivalent to CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WFC/NFC/03 but with the following exception:

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 of ETSI TS 124 379 [9] shall be ignored.

Message Sequence Diagram

Check figure 62as.

Message Details

`Trace Pending`

Interoperability Test Description

Table 71at: CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WOFC/02 ITD

Interoperability Test Description	
Identifier	CONN-MCPTT/ONN/FIRST/MANUAL/ONDEM/WOFC/02
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call to a functional alias without floor control
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • MCPTT Client A has activated sip:fa_1@example.com FA • MCPTT Client B, C, D have activated sip:fa_2@example.com FA

Test Sequence	Step	Type	Description
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls a functional alias sip:fa_2
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS including a <functional-alias-URI> element set to the FA
	3	check	-Stripped-The MCPTT participating checks fa_1 and forwards the INVITE to the controlling keeping the <functional-alias-URI> element of the <mcpttinfo> in the outgoing SIP request
	4	check	The controlling sends a SUBSCRIBE to the controlling owning the target FA (fa_2) to check which mcptt_ids have activated it
	5	check	The controlling owning the FA sends a NOTIFY back with the list of users
	6	check	The controlling server creates an INVITE per each of the users that have activated the target FA
	7	check	Upon arrival of the INVITE adapted by the terminating participating function to the terminating first-to-answer Client User 2 is notified
	8	check	User 2 accepts the private call and all the signalling is completed
	9	check	Upon notification of the first-answering-callee the rest of dialogs are cancelled
	10	verify	Call connected, media flows exchanged and received FA in the <functional-alias-URI> of the calling user -if present- shown in the client

7.2.105 MCPTT User calls a FA using an on-demand first-to-answer MCPTT call with floor control using pre-established sessions [CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/03]

Clause 11.1.1.2.2.1 in ETSI TS 124 379 [9] step 9) b) defines the elements in the mcptt-info to add the calling to a FA:

- with the <call-to-functional-alias-ind> set to "true" if the MCPTT client is aware of active functional aliases and an active functional alias is to be called or "false" otherwise; and
- if the MCPTT client needs to include an active functional alias in the initial SIP REFER request, with the <functional-alias-URI> set to the URI of the used functional alias.

Message Sequence Diagram

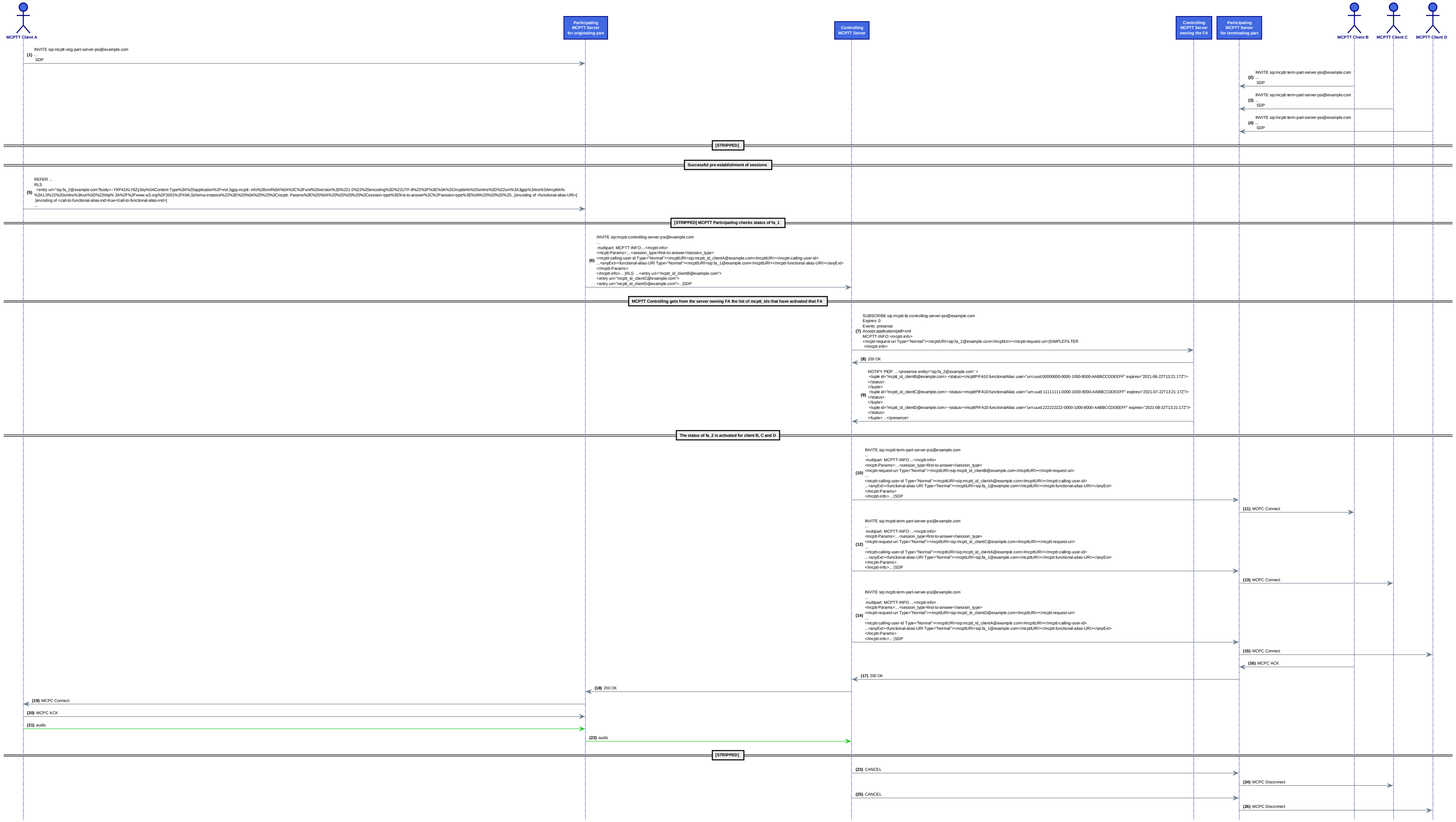

Figure 62at: CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/03 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71au: CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/03 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call where the Client includes the FA in <functional-alias-URI> and calling to a Functional Alias (fa_2)		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • MCPTT Client A has activated sip:fa_1@example.com FA • MCPTT Clients B, C, D have activated sip:fa_2@example.com FA		
Test Sequence	**Step**	**Type**	**Description**
	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) and includes <functional-alias-URI>
	5	check	Dialog creating REFER received at the MCPTT participating server of User 1 (<call-to-functional-alias-ind> to true encoded)
	6	check	-Stripped-The MCPTT participating checks fa_1 and creates the INVITE to the controlling including the <functional-alias-URI> element of the <mcpttinfo> in the outgoing SIP request
	7	check	The controlling sends a SUBSCRIBE to the controlling owning the target FA (fa_2) to check which mcptt_ids have activated it
	8	check	The controlling owning the FA sends a NOTIFY back with the list of users
	9	check	The controlling server creates an INVITE per each of the users that have activated the target FA
	10	check	Upon arrival of each INVITE the terminating participating function Client User 2, 3, 4 are notified using the preestablished sessions (MCPC connect)
	11	check	User 2 is the first that accepts the private call and all the signalling is completed
	12	check	Upon notification of the first-answering-callee the rest of dialogs are cancelled
	13	verify	Call connected, media flows exchanged and received FA in the <functional-alias-URI> of the calling user -if present- shown in the client

7.2.106 MCPTT User calls a FA using a pre-established first-to-answer MCPTT call in manual commencement mode without floor control [CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WOFC/02]

This test case is equivalent to CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/03 but with exceptions related to the use of without floor control call type in clause 11.1.2.2 of ETSI TS 124 379 [9].

NOTE: The same Note as in CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WFC/NFC/03 applies.

When the MCPTT user wants to make a private call without floor control or first-to-answer call without floor control using a pre-established session, the MCPTT client shall follow the procedures in clause 11.1.1.2.2.1 in ETSI TS 124 379 [9] with the following exceptions:

1) step 8 c) i) is re-written as: if the SDP parameters of the pre-established session contain a media-level section of a media-floor control entity or if end-to-end security is required for the private call, an application/sdp MIME body containing the SDP parameters of the pre-established session according to ETSI TS 124 229 [4] with the clarifications given in clause 6.2.1 in ETSI TS 124 379 [9]. If the pre-established session was established with implicit floor control, then the application/sdp MIME body shall not contain the implicit floor request as specified in clause 6.4; and

2) step 9a) is re-written as: if the SDP parameters of the pre-established session contain a media-level section of a media-floor control entity, an application/sdp MIME body containing the SDP parameters of the pre-established session according to ETSI TS 124 229 [4] with the clarifications given in clause 6.2.1 in ETSI TS 124 379 [9]. If the pre-established session was established with implicit floor control, then the application/sdp MIME body shall not contain the implicit floor request as specified in clause 6.4.

Message Sequence Diagram

Check figure 62at.

Message Details

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Trace Pending
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Interoperability Test Description

Table 71av: CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WOFC/02 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/FIRST/MANUAL/PRE/WOFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a first-to-answer call where the Client includes the FA in <functional-alias-URI> and calling to a Functional Alias (fa_2) without floor control		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • MCPTT Client A has activated sip:fa_1@example.com FA • MCPTT Clients B, C, D have activated sip:fa_2@example.com FA		
Test Sequence	**Step**	**Type**	**Description**
	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) and includes <functional-alias-URI>
	5	check	Dialog creating REFER received at the MCPTT participating server of User 1 (<call-to-functional-alias-ind> to true encoded)
	6	check	-Stripped-The MCPTT participating checks fa_1 and creates the INVITE to the controlling including the <functional-alias-URI> element of the <mcpttinfo> in the outgoing SIP request
	7	check	The controlling sends a SUBSCRIBE to the controlling owning the target FA (fa_2) to check which mcptt_ids have activated it
	8	check	The controlling owning the FA sends a NOTIFY back with the list of users
	9	check	The controlling server creates an INVITE per each of the users that have activated the target FA
	10	check	Upon arrival of each INVITE the terminating participating function Client User 2, 3, 4 are notified using the preestablished sessions (MCPC connect)
	11	check	User 2 is the first that accepts the private call and all the signalling is completed
	12	check	Upon notification of the first-answering-callee the rest of dialogs are cancelled
	13	verify	Call connected, media flows exchanged and received FA in the <functional-alias-URI> of the calling user -if present- shown in the client

7.2.107 A not-authorized MCPTT User initiates an on-demand private MCPTT call in automatic commencement model with floor control [CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/05]

This TC is the first of a series of similar test cases evaluating the "restricting incoming private communications" feature. It basically comprises the same signalling as in [CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/01] but the terminating participating checks whether the user is authorized to make a private call to a specific user.

More specifically, as defined in clause 11.1.1.3.2 in ETSI TS 124 379 [9] the terminating participating server checks in Step 6a) whether "the <session-type> element of the application/vnd.3gpp.mcptt-info+xml MIME body is set to "private"" and "the <IncomingPrivateCallList> element exists in the MCPTT user profile document with one or more <entry> elements" and "i) if the <mcptt-calling-user-id> element of the application/vnd.3gpp.mcptt-info+xml MIME body of the incoming SIP INVITE request does not match with one of the <entry> elements of the <IncomingPrivateCallList> element of the MCPTT user profile document" (MCPTT user profile document in ETSI TS 124 484 [14]) and "ii) if configuration is not set in the MCPTT user profile document that allows the MCPTT user to receive a private call by users not contained within the <entry> elements of the <IncomingPrivateCallList> element" then:

i) shall reject the "SIP INVITE request for terminating participating MCPTT function" with a SIP 403 (Forbidden) response including warning text set to "159 user not authorized to be called by this originating user" in a Warning header field as specified in clause 4.4 in ETSI TS 124 379 [9] and shall not continue with the rest of the steps.

Message Sequence Diagram

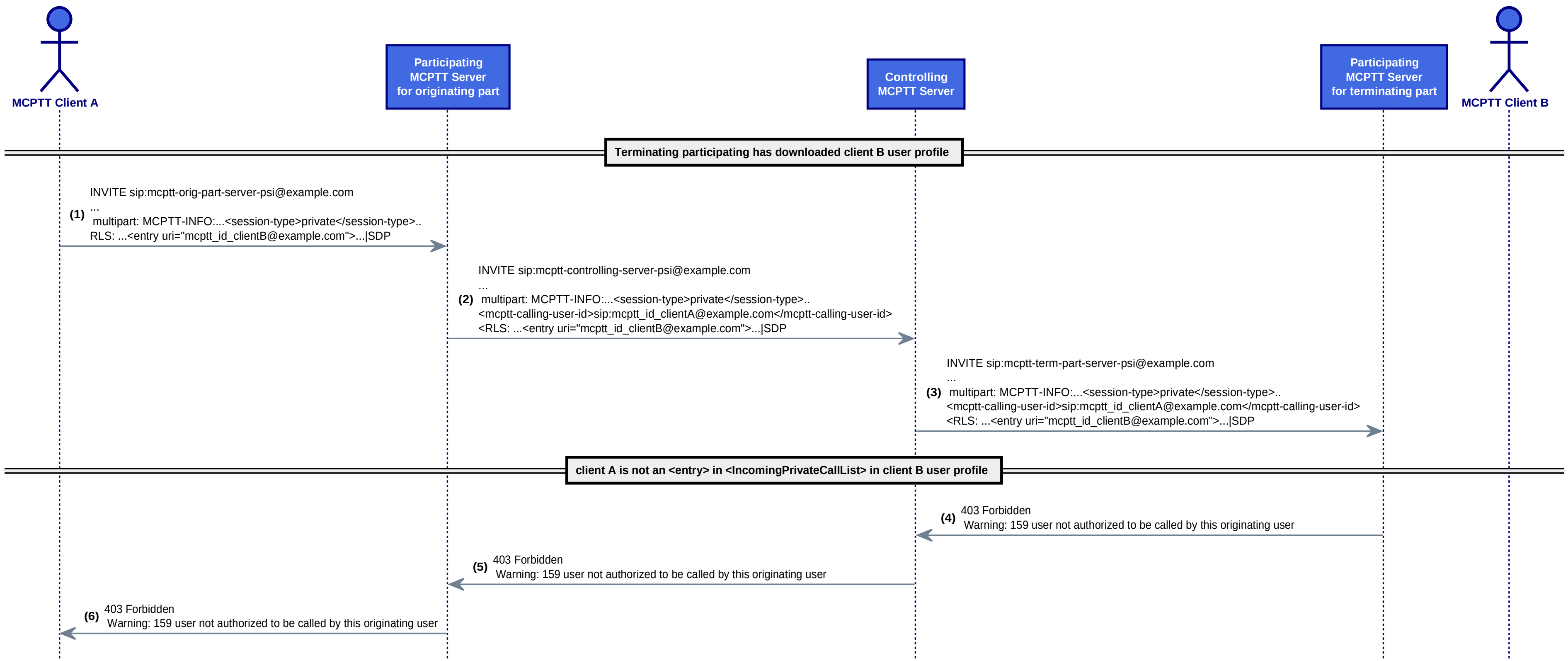

Figure 62au: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/05 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71aw: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/05 ITD

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/05</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with automatic commencement mode where the user is not authorized</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL
• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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
• Terminating participating has retrieved and cached client B's user profile</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="7">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>User 1 (mcptt_id_clientA@example.com) calls User 2 (mcptt_id_clientB@example.com)</td></tr>
<tr><td>2</td><td>check</td><td>Dialog creating INVITE received at the MCPTT participating server of User 1</td></tr>
<tr><td>3</td><td>check</td><td>The participating server adapts the mcptt-info accordingly and creates an INVITE to the controlling server</td></tr>
<tr><td>4</td><td>check</td><td>The controlling server check permissions and forward the INVITE to the participating server of the callee</td></tr>
<tr><td>5</td><td>check</td><td>The terminating participating function responsible for User 2 checks the user profile and verifies mcptt_id_clientA is not included in the incomingPrivateCallList and rejects the call</td></tr>
<tr><td>6</td><td>verify</td><td>403 Forbidden with the proper warning is generated and forwarded back to the originating</td></tr>
</table>

7.2.108 A not-authorized MCPTT User initiates an on-demand private MCPTT call in manual commencement mode with floor control [CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WFC/NFC/02]

This TC is equivalent to CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/05 but considering the specific headers for manual commencement mode (an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [31]), therefore specific checks in clause 11.1.1.3.2 in ETSI TS 124 379 [9] in the terminating participating server are equally applied, resulting in a 403 Forbidden message.

Message Sequence Diagram

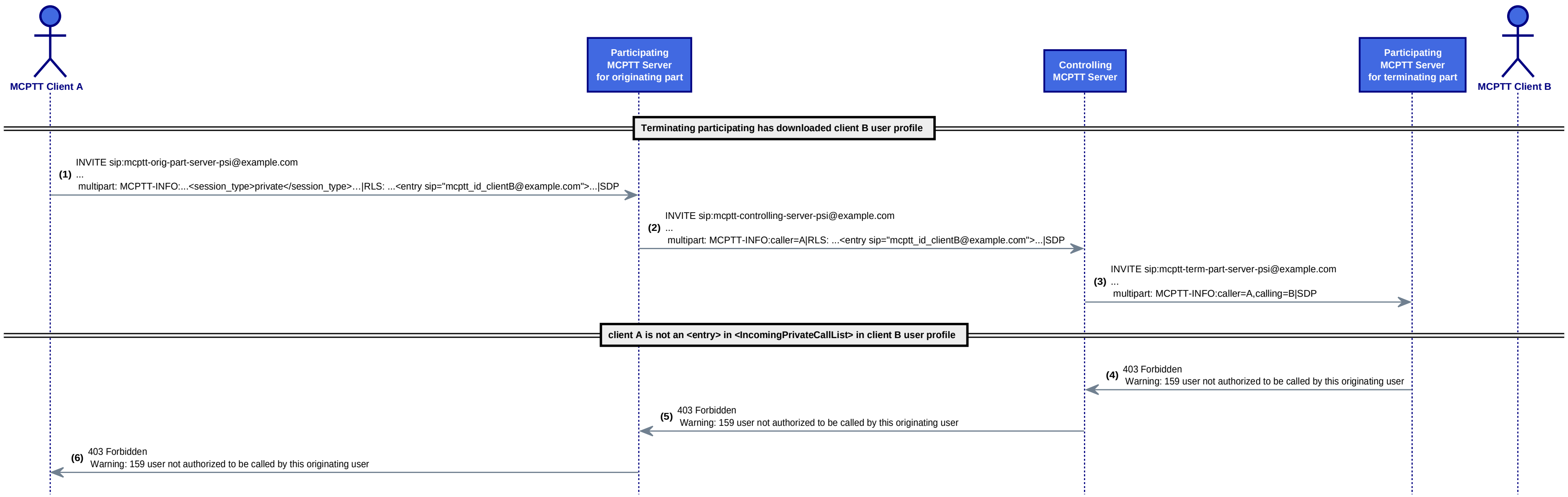

Figure 62av: CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WFC/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71ax: CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WFC/NFC/02 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WFC/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with manual commencement mode where the user is not authorized		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Terminating participating has retrieved and cached client B's user profile		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) calls User 2 (mcptt_id_clientB@example.com) using manual mode
	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	The terminating participating function responsible for User 2 checks the user profile and verifies mcptt_id_clientA is not included in the incomingPrivateCallList and rejects the call
	6	verify	403 Forbidden with the proper warning is generated and forwarded back to the originating

7.2.109 A not-authorized MCPTT User initiates a pre-established private MCPTT call in automatic commencement mode with floor control [CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/02]

During the establishment of a private called using automatic commencement mode with floor control using a pre-established session, the terminating side is exactly the same as in CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/05, so that the clause 11.1.1.3.2 in ETSI TS 124 379 [9] is to be applied again.

Therefore, after checking the user-profile the terminating participating server shall reject the "SIP INVITE request for terminating participating MCPTT function" with a SIP 403 (Forbidden) response including warning text set to "159 user not authorized to be called by this originating user" in a Warning header field.

Message Sequence Diagram

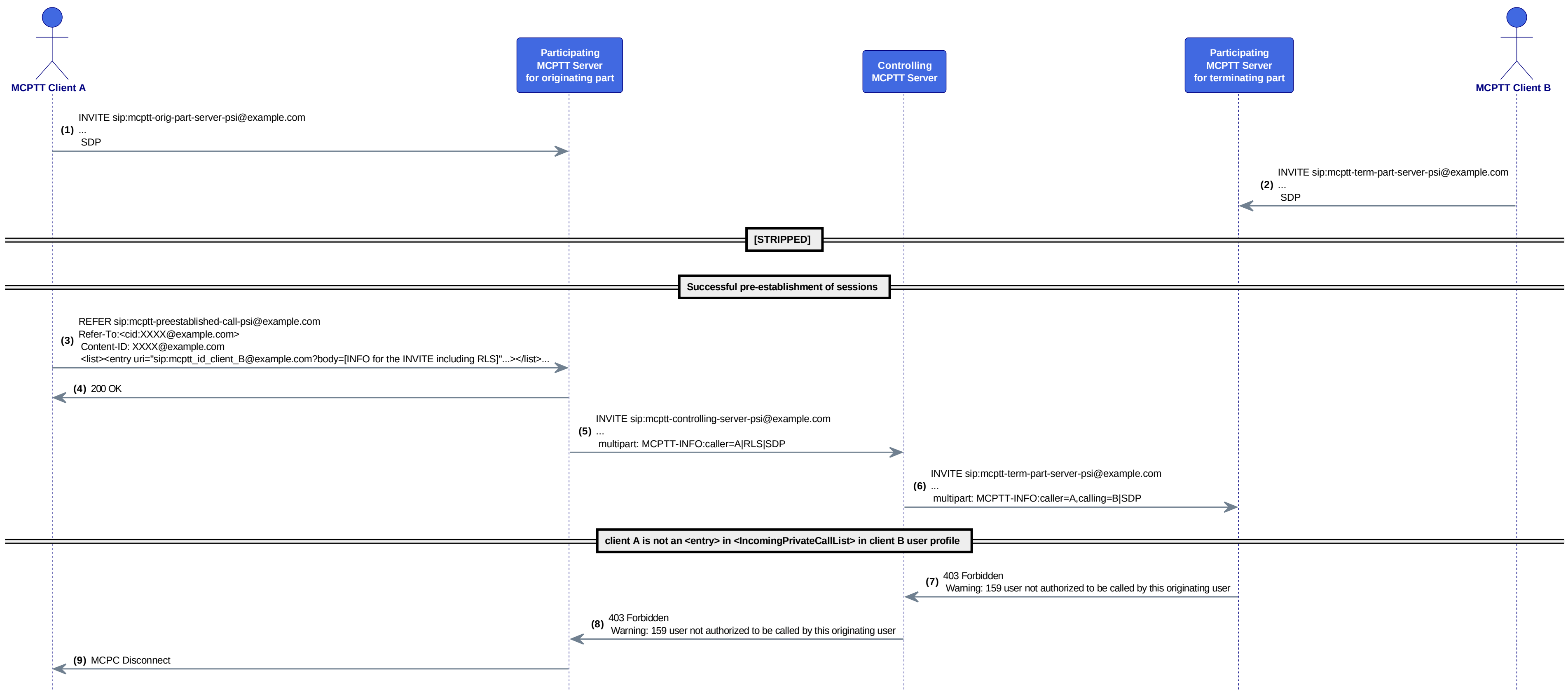

Figure 62aw: CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71ay: CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/02 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with automatic commencement mode using pre-established sessions where the user is not authorized		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Terminating participating has retrieved and cached client B's user profile		
Test Sequence	**Step**	**Type**	**Description**
	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
	7	check	The terminating participating function responsible for User 2 checks the user profile and verifies mcptt_id_clientA is not included in the incomingPrivateCallList and rejects the call
	8	verify	403 Forbidden with the proper warning is generated and forwarded back to the originating

7.2.110 A not-authorized MCPTT User initiates a pre-established private MCPTT call in manual commencement mode with floor control [CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WFC/NFC/02]

As described in CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WFC/NFC/01, the difference between the automatic and manual commencement mode for private calls over pre-established session in case of an authorized user is limited to the signalling between the terminating participating and the callee: basically, following clause 6.3.2.2.6.3 of ETSI TS 124 379 [9], it includes a new SIP signalling procedure in the terminating part so that, upon receiving a SIP 200 (OK) response to the SIP re-INVITE request, the participating MCPTT function sends a MCPC Connect message.

However, since in this case the terminating will reject the call setup, the resulting sequence diagram (apart from the Answer-Mode: manual header in the SIP signalling) is equal to that in CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/02. The Answer-Mode in the original REFER will be included in the headers portion of the SIP URI contained in the <entry> element of the application/resource-lists MIME body, referenced by the "cid" URL in the Refer-To header field.

Message Sequence Diagram

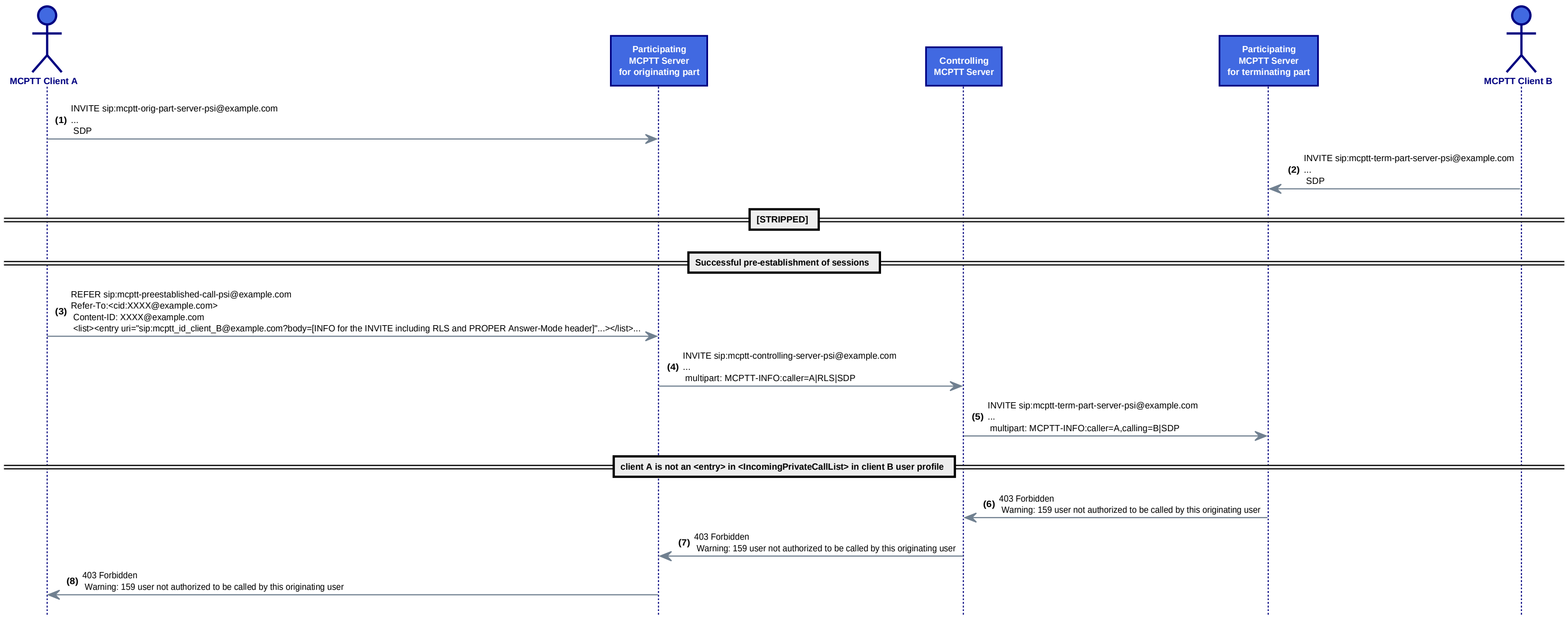

Figure 62ax: CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WFC/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71az: CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WFC/NFC/02 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WFC/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with manual commencement mode using pre-established sessions where the user is not authorized		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Terminating participating has retrieved and cached client B's user profile		
Test Sequence	**Step**	**Type**	**Description**
	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 (including manual commencement mode in the Answer-Mode header) and forwards it to the controlling
	6	check	The controlling server forwards the INVITE to the participating server of the callee
	7	check	The terminating participating function responsible for User 2 checks the user profile and verifies mcptt_id_clientA is not included in the incomingPrivateCallList and rejects the call
	8	verify	403 Forbidden with the proper warning is generated and forwarded back to the originating

7.2.111 A not-authorized MCPTT User initiates an on-demand private MCPTT call in automatic commencement mode without floor control [CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WOFC/02]

The checking by the terminating participating and resulting signalling and sequence diagram are equivalent to CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/05 but considering a "without floor control" private call procedures. Those specific procedures are defined in clause 11.1.2 in ETSI TS 124 379 [9] and basically result on the client not offering a media-level section for media-floor control entity and ignoring step 13 of clause 11.1.1.2.1.1 (regarding implicit floor control).

Message Sequence Diagram

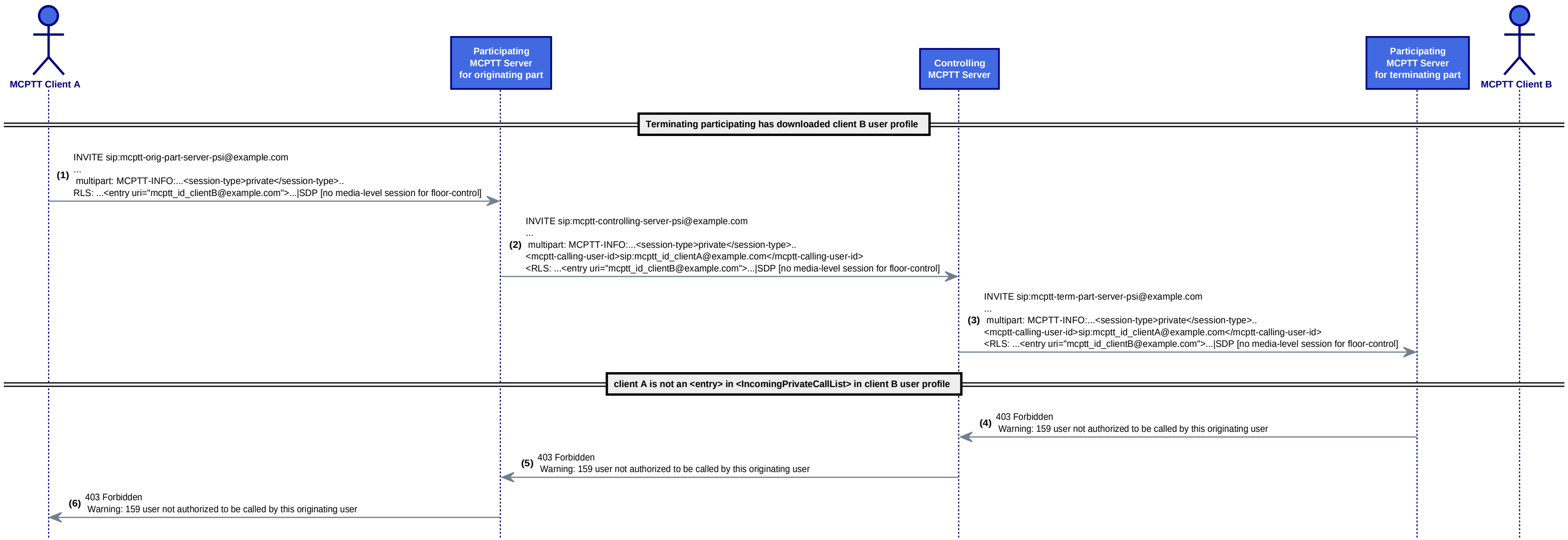

Figure 62ay: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WOFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71ba: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WOFC/02 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WOFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call with automatic commencement mode without floor control where the user is not authorized		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Terminating participating has retrieved and cached client B's user profile		
Test Sequence	**Step**	**Type**	**Description**
	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 (without media-level line for floor-control in the SDP)
	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	The terminating participating function responsible for User 2 checks the user profile and verifies mcptt_id_clientA is not included in the incomingPrivateCallList and rejects the call
	6	verify	403 Forbidden with the proper warning is generated and forwarded back to the originating

7.2.112 A not-authorized MCPTT User initiates an on-demand private MCPTT call in manual commencement mode without floor control [CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WOFC/02]

This test case is a combination of CONN-MCPTT/ONN/PRIV/MANUAL/ONDEM/WFC/NFC/02 (a not-authorized MCPTT User initiates an on-demand private MCPTT call in manual commencement mode with floor control) and the considerations for without floor control calls in CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WOFC/02 (a not-authorized MCPTT User initiates an on-demand private MCPTT call in automatic commencement mode without floor control).

Message Sequence Diagram

Check figure 62av.

Message Details

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Trace Pending
```

7.2.113 A not-authorized MCPTT User initiates a pre-established private MCPTT call in automatic commencement mode without floor control [CONN-MCPTT/ONN/PRIV/AUTO/PRE/WOFC/02]

Similarly to the previous test case, this one combines CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/02 (a not-authorized MCPTT User initiates a pre-established private MCPTT call in automatic commencement mode with floor control and the considerations for without floor control included in clause 11.1.2 in ETSI TS 124 379 [9] for pre-established sessions in the originating side.

The MCPTT client shall follow the procedures in clause 11.1.1.2.2.1 with the following exceptions:

1) step 8 c) i) is re-written as: if the SDP parameters of the pre-established session contain a media-level section of a media-floor control entity or if end-to-end security is required for the private call, an application/sdp MIME body containing the SDP parameters of the pre-established session according to ETSI TS 124 229 [6] with the clarifications given in clause 6.2.1 in ETSI TS 124 379 [9]. If the pre-established session was established with implicit floor control, then the application/sdp MIME body shall not contain the implicit floor request as specified in clause 6.4; and

2) step 9a) is re-written as: if the SDP parameters of the pre-established session contain a media-level section of a media-floor control entity, an application/sdp MIME body containing the SDP parameters of the pre-established session according to ETSI TS 124 229 [6] with the clarifications given in clause 6.2.1 in ETSI TS 124 379 [9]. If the pre-established session was established with implicit floor control, then the application/sdp MIME body shall not contain the implicit floor request as specified in clause 6.4.

Message Sequence Diagram

Since low level details of the SDP encoded in the REFER are not provided the message sequence is equivalent to figure 62aw.

Message Details

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Trace Pending
```

7.2.114 A not-authorized MCPTT User initiates a pre-established private MCPTT call in manual commencement mode without floor control [CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WOFC/02]

This test case is equivalent to CONN-MCPTT/ONN/PRIV/AUTO/PRE/WOFC/02 but with manual commencement mode. Since the checking for the authorization of the calling user is carried out in the terminating participating server before the main signalling differences between auto and manual commencement mode would eventually take place the signalling and sequence diagram and equivalent to that one but with the encoding of the SDP as considered in CONN-MCPTT/ONN/PRIV/MANUAL/PRE/WFC/NFC/02.

Message Sequence Diagram

Since low level details of the SDP encoded in the REFER are not provided the sequence diagram is equivalent to figure 62aw.

Message Details

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Trace Pending
```

7.2.115 A not-authorized 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/06]

This test cases describes the unsuccessful attempt by a not-authorized MCPTT user to initiate an emergency call establishment as in CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/02 but with the terminating participating checking the callee user's user profile and rejecting the call setup by sending back a 403 Forbidden message with the proper warning information.

Message Sequence Diagram

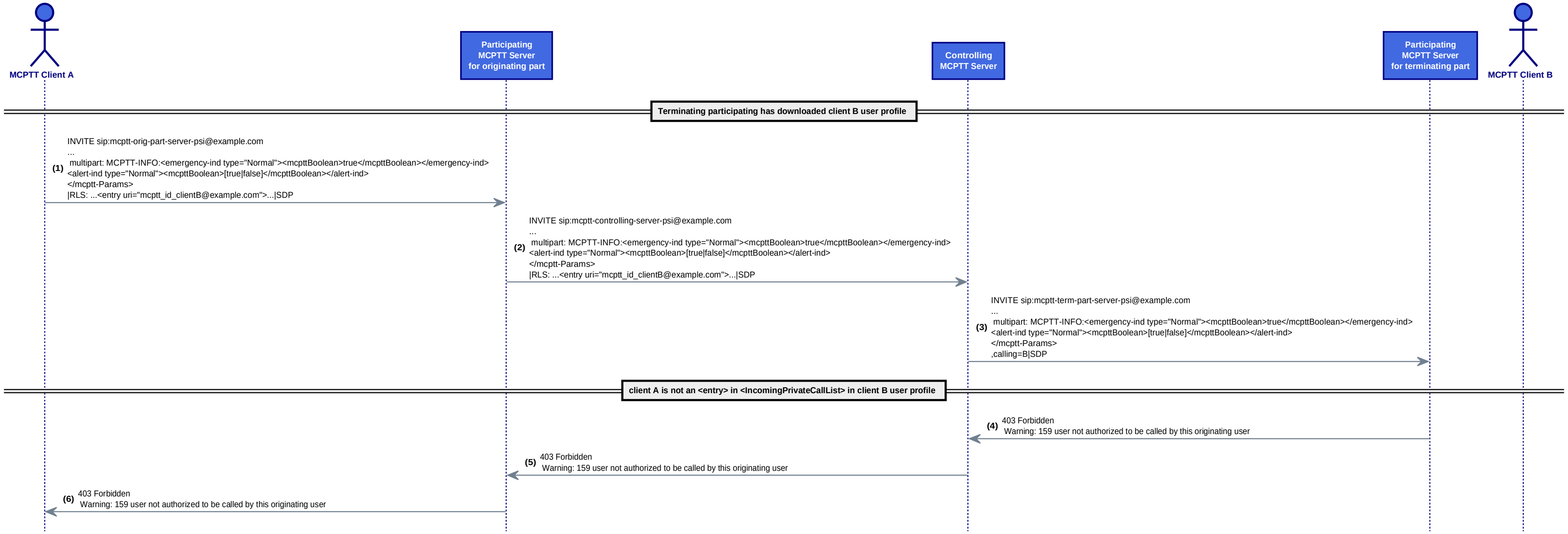

Figure 62az: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/06 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 71bb: CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/06 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/PRIV/AUTO/ONDEM/WFC/NFC/05		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of an emergency private call with automatic commencement mode where the user is not authorized		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Terminating participating has retrieved and cached client B's user profile		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates an emergency private 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	The terminating participating function responsible for User 2 checks the user profile and verifies mcptt_id_clientA is not included in the incomingPrivateCallList and rejects the call
	6	verify	403 Forbidden with the proper warning is generated and forwarded back to the originating

7.2.116 Handling of non acknowledged user information during an on-demand prearranged MCPTT Group Call [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/11]

As described in clause 6.3.3.3 in ETSI TS 124 379 [9] "when the controlling MCPTT function receives a SIP INVITE request to initiate a group session and there are members of the group document retrieved from the group management server that are affiliated and are marked as <on-network-required> as specified in ETSI TS 124 481 [11]" then the controlling MCPTT function shall start a specific timer TNG1 and handle it according to the received answers (more details in CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/12).

In this test case the latest combination of clause 6.3.3.3 in ETSI TS 124 379 [9] is considered, covering the following conditions at the same time:

1) the controlling MCPTT function receives a final SIP 4xx, 5xx or 6xx response from an affiliated and <on-network-required> group member prior to expiry of timer TNG1 (acknowledged call setup timer);

2) the local counter of the number of SIP 200 (OK) responses received from invited members is greater than or equal to the value of the <on-network-minimum-number-to-start> element of the group document; and

3) based on policy, the controlling MCPTT function decides to continue with the establishment of the group call without the affiliated and <on-network-required> group member;

Then the controlling MCPTT function:

…

2) if all other invited clients have responded with SIP 200 (OK) responses, shall:

   a) stop timer TNG1 (acknowledged call setup timer);

   b) generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.2 in ETSI TS 124 379 [9] before continuing with the rest of the steps;

   c) include in the SIP 200 (OK) response the warning text set to "111 group call proceeded without all required group members" in a Warning header field as specified in clause 4.4 in ETSI TS 124 379 [9];

   d) include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.3.2.1 in ETSI TS 124 379 [9];

   e) interact with the media plane as specified in ETSI TS 124 380 [5]; and

   f) send a SIP 200 (OK) response to the inviting MCPTT client according to ETSI TS 124 229 [6].

And, upon receiving a SIP ACK to the above SIP 200 (OK) response and checking that:

1) the SIP 200 (OK) response contained the warning text set to "111 group call proceeded without all required group members" in a Warning header field; and

2) the user profile of MCPTT client that originated the group session contains the element <allow-to-receive-non-acknowledged-users-information> and is set to a value of "true";

3) then the controlling MCPTT function may generate a SIP INFO request including the Info-Package header field set to g.3gpp.mcptt-info in the SIP INFO request and n application/vnd.3gpp.mcptt-info+xml MIME body as specified in clause F.1 in ETSI TS 124 379 [9] with a <non-acknowledged-user> element containing the MCPTT ID of each of the invited members that have not sent a SIP 200 (OK) response; and send the SIP INFO request towards the inviting MCPTT client in the dialog created by the SIP request from the inviting MCPTT client.

Message Sequence Diagram

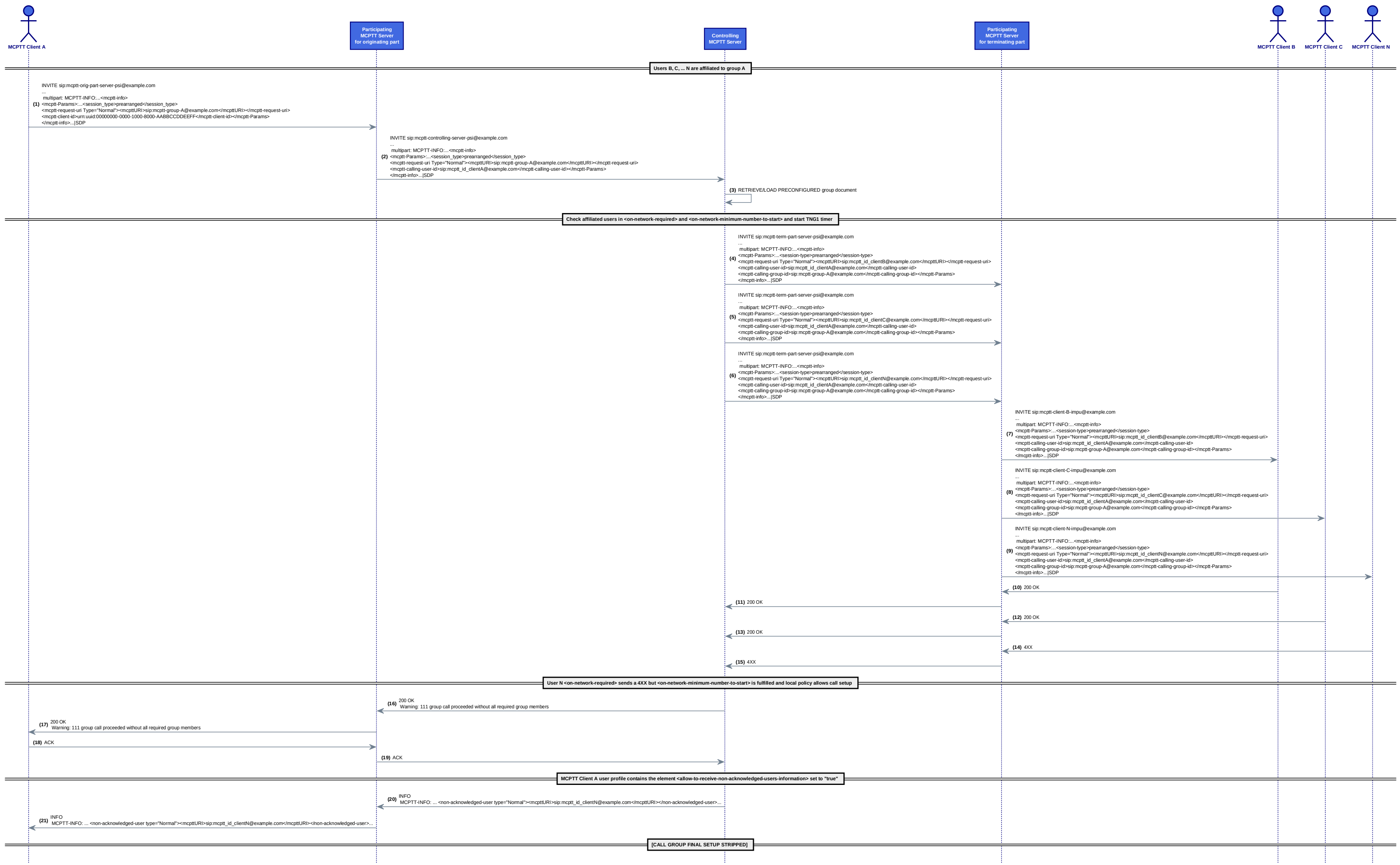

Figure 62ba: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/11 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71bc: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/11 ITD

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">CONN/ONN/GROUP/PREA/ONDEM/NFC/11</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call where one of the affiliated and required group member sends a 4XX but calling conditions are met and a non-acknowledged INFO message is sent to the calling user</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)
• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)
• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity - among all elements of the specific scenario
• 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
• Calling user is affiliated to the called group
• Users are affiliated and group document and user profile have been downloaded by the controlling</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td></td><td>1</td><td>stimulus</td><td>User 1 (mcptt_id_clientA@example.com) calls mcptt-group-A</td></tr>
<tr><td></td><td>2</td><td>check</td><td>Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS</td></tr>
<tr><td></td><td>3</td><td>check</td><td>The MCPTT participating forwards the INVITE</td></tr>
<tr><td></td><td>4</td><td>check</td><td>The MCPTT controlling server receives the INVITE</td></tr>
<tr><td></td><td>5</td><td>check</td><td>The MCPTT controlling server loads the affiliated members of the mcptt-group-A (either preconfigured or retrieved from the GMS), creates an INVITE per each of the "n" members, checks <on-network-required> and starts TNG1 timer</td></tr>
<tr><td></td><td>6</td><td>check</td><td>"n" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)</td></tr>
<tr><td></td><td>7</td><td>check</td><td>"n" INVITEs received at the affiliated mcptt_id_clientX</td></tr>
<tr><td></td><td>8</td><td>check</td><td>All but one group members answer 200 OK (User N sends 4XX)</td></tr>
<tr><td></td><td>9</td><td>check</td><td>Controlling checks that the <on-network-minimum-number-to-start> is met and local policy allows the call setup in such conditions regardless the 4XX</td></tr>
<tr><td></td><td>10</td><td>check</td><td>200 OK with proper Warning header is sent back to the caller</td></tr>
<tr><td></td><td>11</td><td>check</td><td>200 OK forwarded by the originating participating arrives at the caller</td></tr>
<tr><td></td><td>12</td><td>check</td><td>ACK sent back from the Caller arrives again at the controller</td></tr>
<tr><td></td><td>13</td><td>check</td><td>Controlling checks user profile and generates a SIP INFO back to the caller to notify which users(s) have not acknowledged</td></tr>
<tr><td></td><td>14</td><td>verify</td><td>Call connected, SIP INFO correctly processed by the caller's client</td></tr>
<tr><td colspan="4">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 9.2.2.2.11 in ETSI TS 124 379 [9].</td></tr>
</table>

7.2.117 Handling of TNG1 timer during the setup of an on-demand prearranged MCPTT Group Call [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/12]

This test case analyses another option for processing the TNG1 timer during the specific situation described in clause 6.3.3.3 in ETSI TS 124 379 [9].

More specifically, TNG1 has expired but the local counter of the number of SIP 200 (OK) responses received from invited members is less than the value of the <on-network-minimum-number-to-start> element, so that the controlling MCPTT function shall wait until further responses have been received from invited clients till that threshold is achieved. Then, if the <on-network-action-upon-expiration-of-timeout-for-acknowledgement-of-required-members> element configured in the group document for the action on expiry of the timer is set to "abandon" indicating that the controlling MCPTT function should abandon the setup of the group call, then the controlling MCPTT function shall:

a) send a SIP 480 (Temporarily Unavailable) response to the MCPTT client that originated the group session with the warning text set to "112 group call abandoned due to required group members not part of the group session" in a Warning header field as specified in clause 4.4 in ETSI TS 124 379 [9];

b) for each confirmed dialog at the controlling MCPTT function, send a SIP BYE request towards the MCPTT clients invited to the group session in accordance with ETSI TS 124 229 [4] and interact with the media plane as specified in ETSI TS 124 380 [5]; and

c) for each non-confirmed dialog at the controlling MCPTT function, send a SIP CANCEL request towards the MCPTT clients invited to the group session in accordance with ETSI TS 124 229 [4].

Message Sequence Diagram

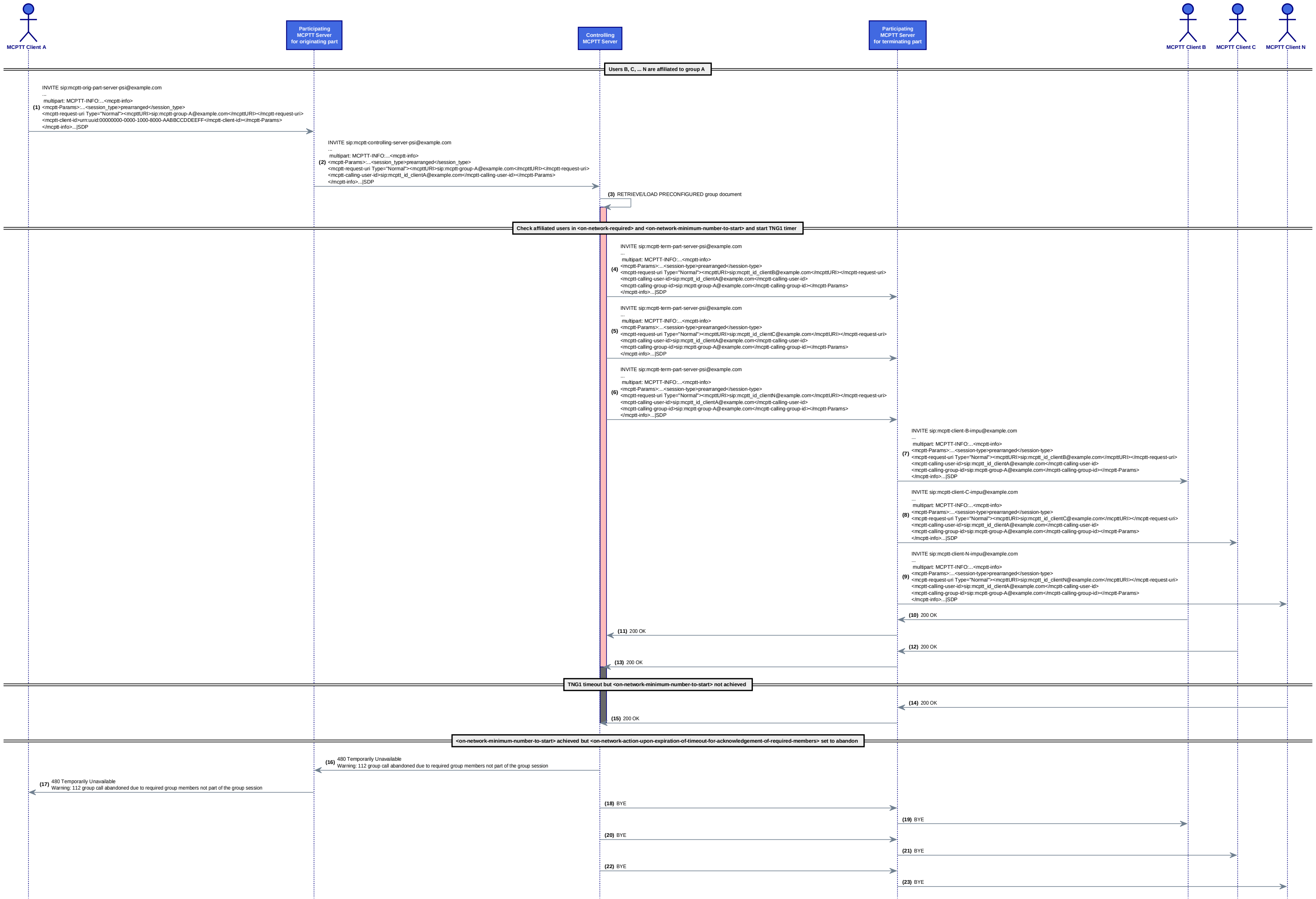

Figure 62bb: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/11 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 71bd: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/12 ITD

Interoperability Test Description	
Identifier	CONN/ONN/GROUP/PREA/ONDEM/NFC/12
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call where TNG1 expires before the minimum number of required users are achieved and the group is configured to abandon the call
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)
Pre-test conditions	• IP connectivity - among all elements of the specific scenario • 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 • Calling user is affiliated to the called group • Users are affiliated and group document and user profile have been downloaded by the controlling

Test Sequence	Step	Type	Description
	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	The MCPTT participating forwards the INVITE
	4	check	The MCPTT controlling server receives the INVITE
	5	check	The MCPTT controlling server loads the affiliated members of the mcptt-group-A (either preconfigured or retrieved from the GMS), creates an INVITE per each of the "n" members, checks <on-network-required> and starts TNG1 timer
	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 the affiliated mcptt_id_clientX
	8	check	TNG1 has expired but not minimum number of 200 OK have been received
	9	check	200 OK Controlling checks that the <on-network-minimum-number-to-start> is met and local policy allows the call setup in such conditions regardless the 4XX
	10	check	480 Temporarily Unavailable with proper Warning header is sent back to the caller
	11	check	All outgoing dialogs cancelled by a BYE
	12	verify	Call setup could not be completed
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

7.2.118 Handling of non acknowledged user information during a prearranged MCPTT Group Call using pre-established session [CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/05]

Clause 6.3.3.3 in ETSI TS 124 379 [9] defines the behaviour for the Controlling server during the setup of a pre-arranged group call. That would therefore apply to both on-demand and using pre-established session. Therefore, the signalling will be similar to that in CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/11 but using the pre-established session mechanism.

There are no references in ETSI TS 124 379 [9] regarding how the SIP INFO will be forwarded by the originating participating to the caller in neither on-demand nor pre-established session cases. For the latter, since the SIP INFO is associated to the specific call setup and does not involve any change on the pre-established session the dialog of the REFER is assumed. The equivalent of the Warning header in 200 OK (now not available) is FFS.

Message Sequence Diagram

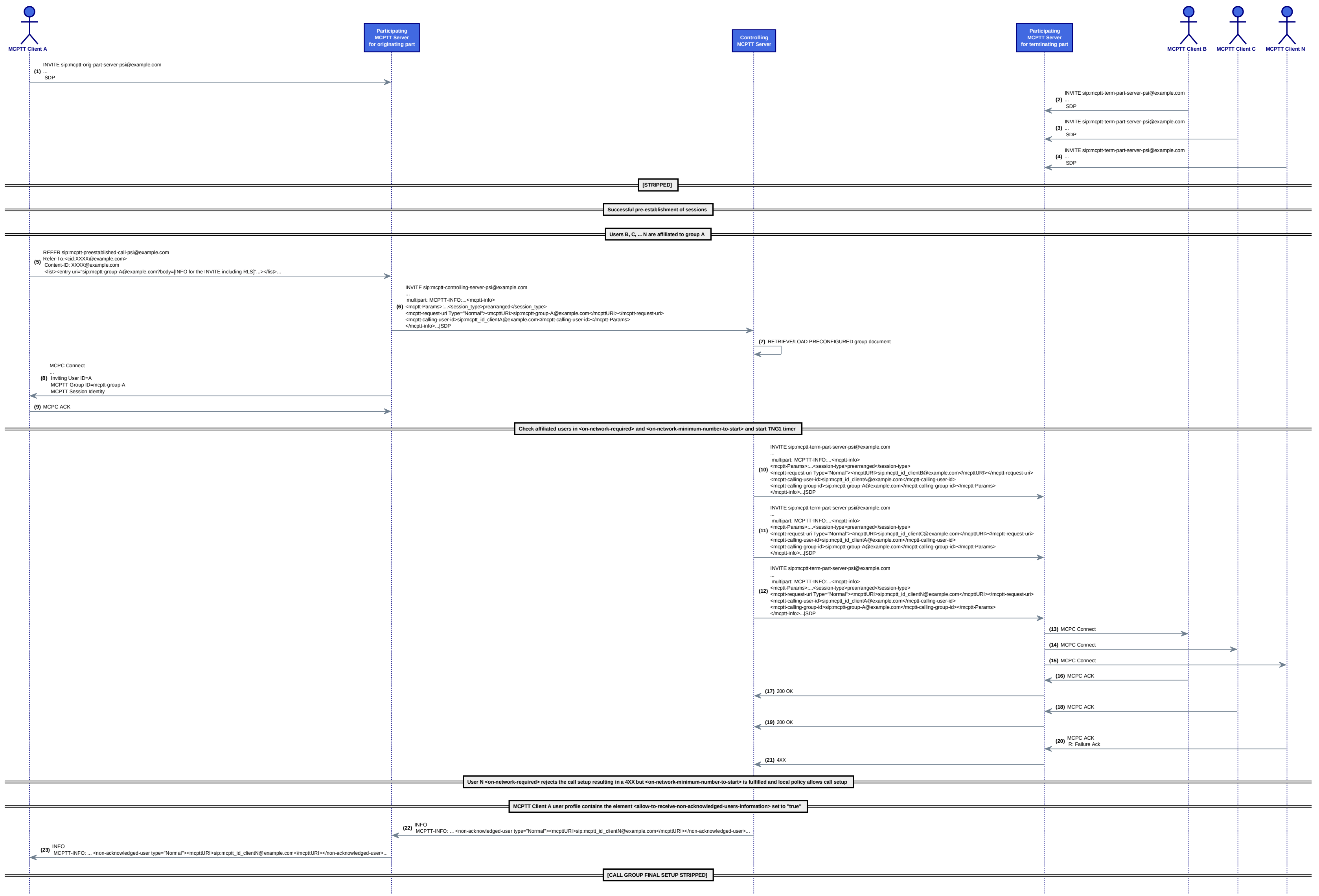

Figure 62bc: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/05 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 71be: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/05 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/05		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call where one of the affiliated and required group member rejects the call resulting in a 4XX but calling conditions are met and a non-acknowledged INFO message is sent to the calling user using pre-established session		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity - among all elements of the specific scenario • 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 • Calling user is affiliated to the called group • Users are affiliated and group document and user profile have been downloaded by the controlling		
Test Sequence	**Step**	**Type**	**Description**
	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
	3	check	The MCPTT participating forwards the INVITE
	4	check	The MCPTT controlling server receives the INVITE
	5	check	The MCPTT controlling server loads the affiliated members of the mcptt-group-A (either preconfigured or retrieved from the GMS), creates an INVITE per each of the "n" members, checks <on-network-required> and starts TNG1 timer
	6	check	"n" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	7	check	"n" MCPC connect received at the affiliated mcptt_id_clientX
	8	check	All but one group members answer MCPC ACK with R: Successful Ack (User N sends R: Failure Ack)
	9	check	Controlling checks that the <on-network-minimum-number-to-start> is met and local policy allows the call setup in such conditions regardless the 4XX
	10	check	200 OK with proper Warning header is sent back to the participating (effect on caller FFS)
	11	check	MCPC Connect sent by the originating participating arrives at the caller
	12	check	ACK sent back from the Caller arrives again at the controller
	13	check	Controlling checks user profile and generates a SIP INFO back to the caller to notify which users(s) have not acknowledged
	14	verify	Call connected, SIP INFO correctly processed by the caller's client
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

7.2.119 Handling of TNG1 timer during the setup of a prearranged MCPTT Group Call using pre-established session [CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/06]

Following the analysis in CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/05 ITD the controlling behaviour would apply but how the feedbacking mechanism arrives at the caller is FFS.

The sequence diagram would be equivalent to CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/12.

Message Sequence Diagram

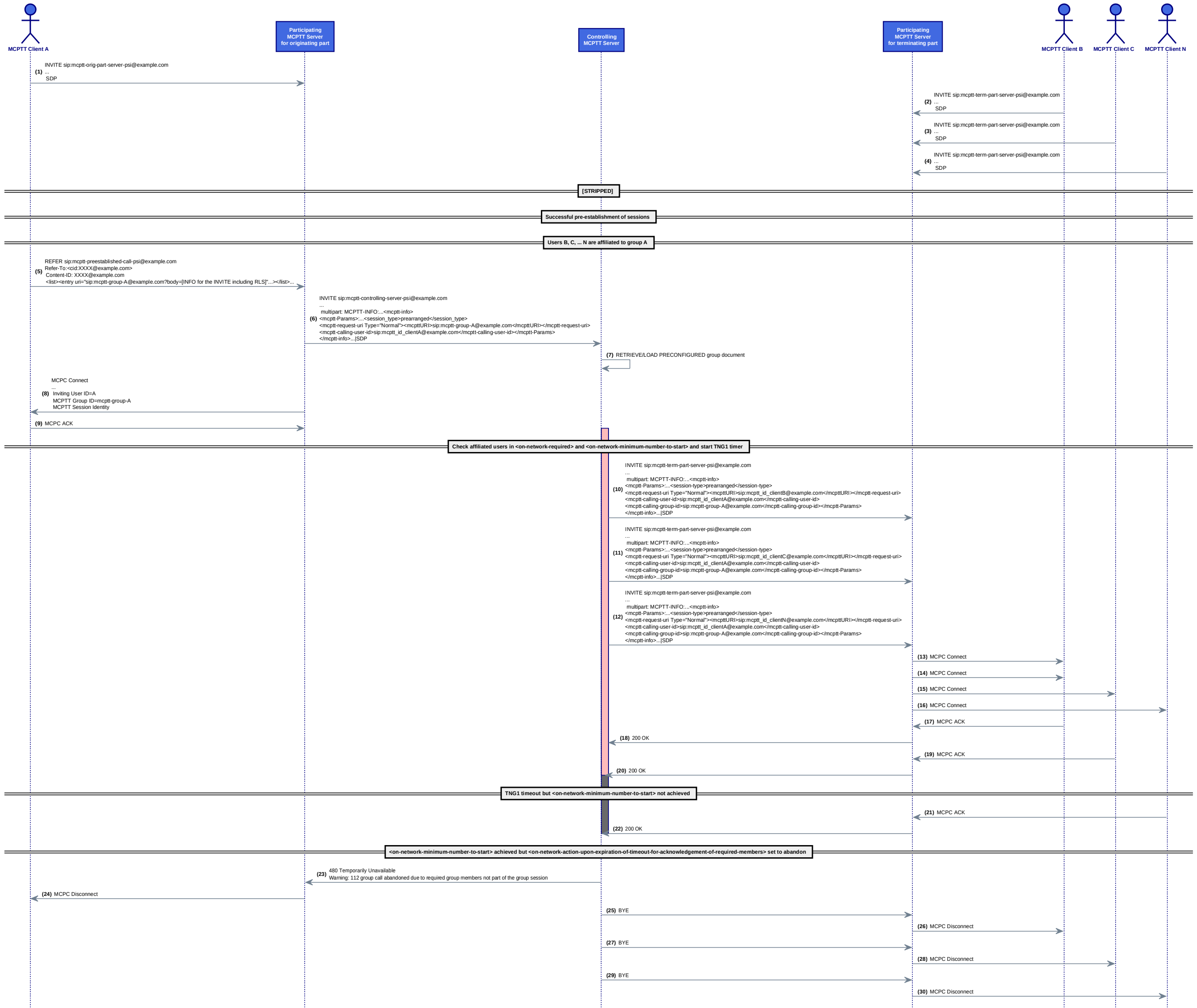

Figure 62bd: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/06 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71bf: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/06 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/06		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling of a pre-arranged on demand Group Call where TNG1 expires before the minimum number of required users are achieved and the group is configured to abandon the call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity - among all elements of the specific scenario • 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 • Calling user is affiliated to the called group • Users are affiliated and group document and user profile have been downloaded by the controlling		
Test Sequence	**Step**	**Type**	**Description**
	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	The MCPTT participating forwards the INVITE
	4	check	The MCPTT controlling server receives the INVITE
	5	check	The MCPTT controlling server loads the affiliated members of the mcptt-group-A (either preconfigured or retrieved from the GMS), creates an INVITE per each of the "n" members, checks <on-network-required> and starts TNG1 timer
	6	check	"n" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	7	check	"n" MCPC Connect received at the affiliated mcptt_id_clientX
	8	check	TNG1 has expired but not minimum number of 200 OK have been received
	9	check	200 OK Controlling checks that the <on-network-minimum-number-to-start> is met and local policy allows the call setup in such conditions regardless the 4XX
	10	check	480 Temporarily Unavailable with proper Warning header is sent back to the caller
	11	check	All outgoing dialogs cancelled by a BYE resulting in MCPC Disconnect on the participating to client side
	12	verify	Call setup could not be completed
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

7.2.120 MCData client establishes a IP Connectivity session with another MCData client [CONN-MCDATA/ONN/IPCONN/01]

As described in clause 20.2.1 in ETSI TS 124 282 [8] When a MCData client receives the request by a user (or user application) to establish a IP Connectivity session with another MCData client the MCData client shall generate a SIP INVITE request in accordance with the MCData ID of the target MCData client. In this test case the target MData ID is considereed included in the request from the user or user application (the other case will be assessed in CONN-MCDATA/ONN/IPCONN/02).

The SIP INVITE will include a MIME resource-lists body with the MCData ID of the invited MCData user, according to rules and procedures of IETF RFC 5366 [30], an application/vnd.3gpp.mcdata-info+xml MIME body with the <mcdatainfo> element containing the <mcdata-Params> element with the <request-type> element set to a value of "one-to-one-ipconn" and the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCData function serving the MCData user.

Upon reception of the INVITE the originating participating MCData function (clause 20.3.1 in ETSI TS 124 282 [8]) shall determine the public service identity of the controlling MCData function hosting the one-to-one IP Connectivity service for the calling user and generate an INVITE including the MCData ID of the originating user in the <mcdata-calling-user-id> of the mcdata-info body and (according to clause 20.1.2 of ETSI TS 124 282 [8]) shall replace the IP address for the offered media stream in the received SDP offer with the IP address of the participating MC Data function.

The Controlling forwards the INVITE to the terminating participating MCData function which, according to the clause 20.5.2 in ETSI TS 124 282 [8], will locate the IMPU for the MCData ID of the target user and forward the INVITE accordingly.

The encoding of the data exchange in the GRE tunnels follows the clause 13 in ETSI TS 124 582 [17], including the usage of session ids as keys in the GRE header to identify every possible tunnel.

Message Sequence Diagram

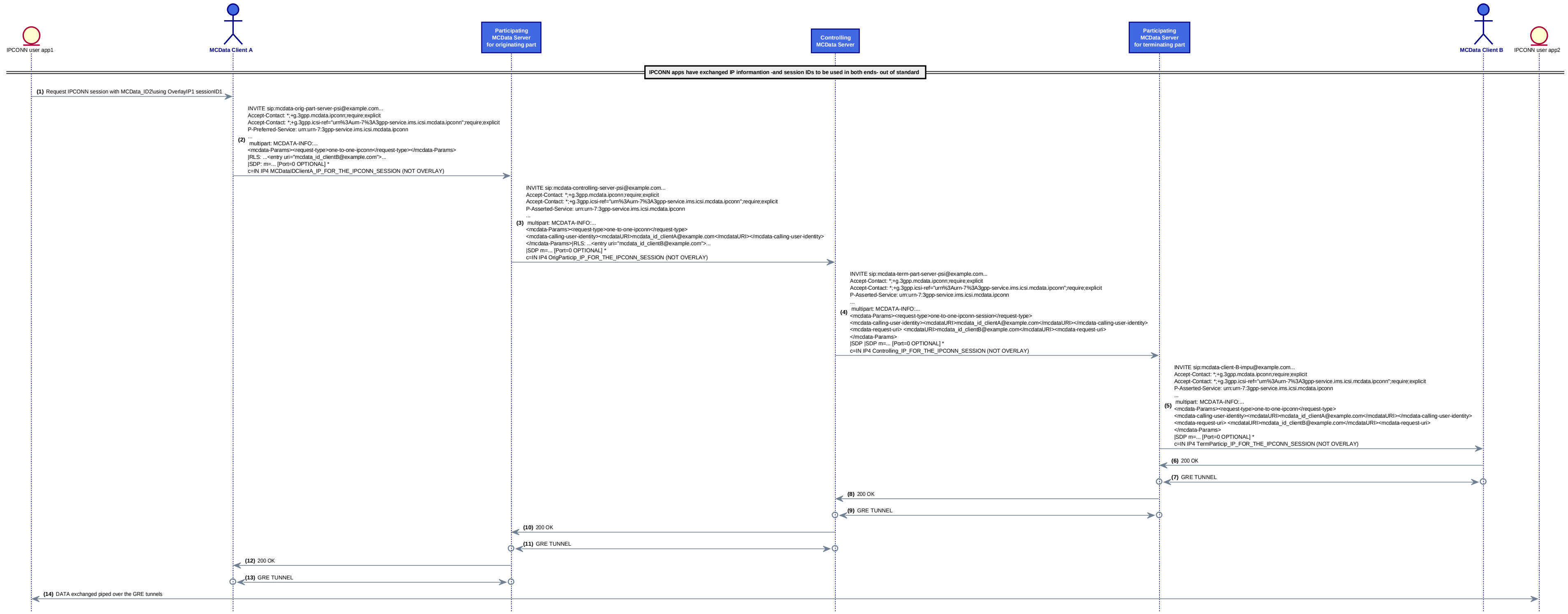

Figure 62be: CONN-MCDATA/ONN/IPCONN/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71bg: CONN-MCDATA/ONN/IPCONN/01 ITD

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/IPCONN/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling to establish a IPCONN Session		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-SDS-MP (clause 6.2) • MCData-Part_ONN-MCData-IPCONN • MCData-Ctrl_ONN-MCData- IPCONN		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id • Overlay IPs, IPs to be used for the IPCONN session and session ids to be agreed		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcdata_id_clientA@example.com) sends an INVITE with ipconn invormation
	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 stablished, different GRE tunnels (with associated key ids matching the session ids) created -including mapping
	6	verify	Exchange of application layer information over the GRE tunnels

7.2.121 MCData client establishes a IP Connectivity session with another MCData client by using the target IP Information [CONN-MCDATA/ONN/IPCONN/02]

The test case is equivalent to CONN-MCDATA/ONN/IPCONN/01 but considering (according to clause 20.2.1 in ETSI TS 124 282 [8]) that the target MCData ID is not included in the request. Therefore, the MCData client will determine the target MCData ID by using the target IP Information included in the request to find a match in the One-to-One communication list of the MCData user profile document as specified in ETSI TS 124 484 [14]. If the MCData ID of the target MCData client is determined implicitly by the target IP Information included in the request, the client searches in leaves below /<x>/<x>/Common/OnetoOne/UserList/<x>/Entry/IPInformation/<x>Entry/ for a match in the IP Information. The MCData ID is given by matching the user entry.

Once the mapping is stablished, the whole signalling and diagram is the same as in CONN-MCDATA/ONN/IPCONN/01.

7.2.122 MCData User initiates an emergency alert by sending a SIP MESSAGE [CONN-MCDATA/ONN/EMERG-ALERT/MSG/01]

MCData emergency alerts using SIP MESSAGE requests are documented in clause 16 in ETSI TS 124 282 [8].

The initiation of an authorized (as determined by clause 16.2.1.1) emergency alert to the indicated MCData group (the mechanism to choose the targeted group in case none is indicated is considered FFS) upon receiving a request from the MCData user shall generate, according to clause 16.2.1.1) a SIP MESSAGE request in accordance with ETSI TS 124 229 [6] and IETF RFC 3428 [42] that includes an application/vnd.3gpp.mcdata-info+xml MIME with the <mcdatainfo> element containing the <mcdata-Params> element with the <mcdata-request-uri> element set to the group identity, the <alert-ind> element set to a value of "true", the <mcdata-client-id> element set to the MCData client ID of the originating MCData client and the specific location information for MCData emergency alert as specified in clause D.4 of ETSI TS 124 282 [8].

The originating participating (clause 16.2.2.1), upon checking the identity and authorization of the MCData user, will forward the message to the controlling (clause 16.2.3.1). The controlling will generate an outgoing SIP MESSAGE request notification of the MCData user's emergency alert indication as specified in clause 6.3.7.1.2 with the clarifications of clause 6.3.7.1.3 for each of the other affiliated members of the group. It will later indicate successful receipt of an emergency alert by generating a SIP MESSAGE request as described in clause 6.3.7.1.5 with the <alert-ind> element set to a value of "true", the <alert-ind-rcvd> element set to a value of true; and the <mcdata-client-id> element with the MCData client ID that was included in the incoming SIP MESSAGE request.

Message Sequence Diagram

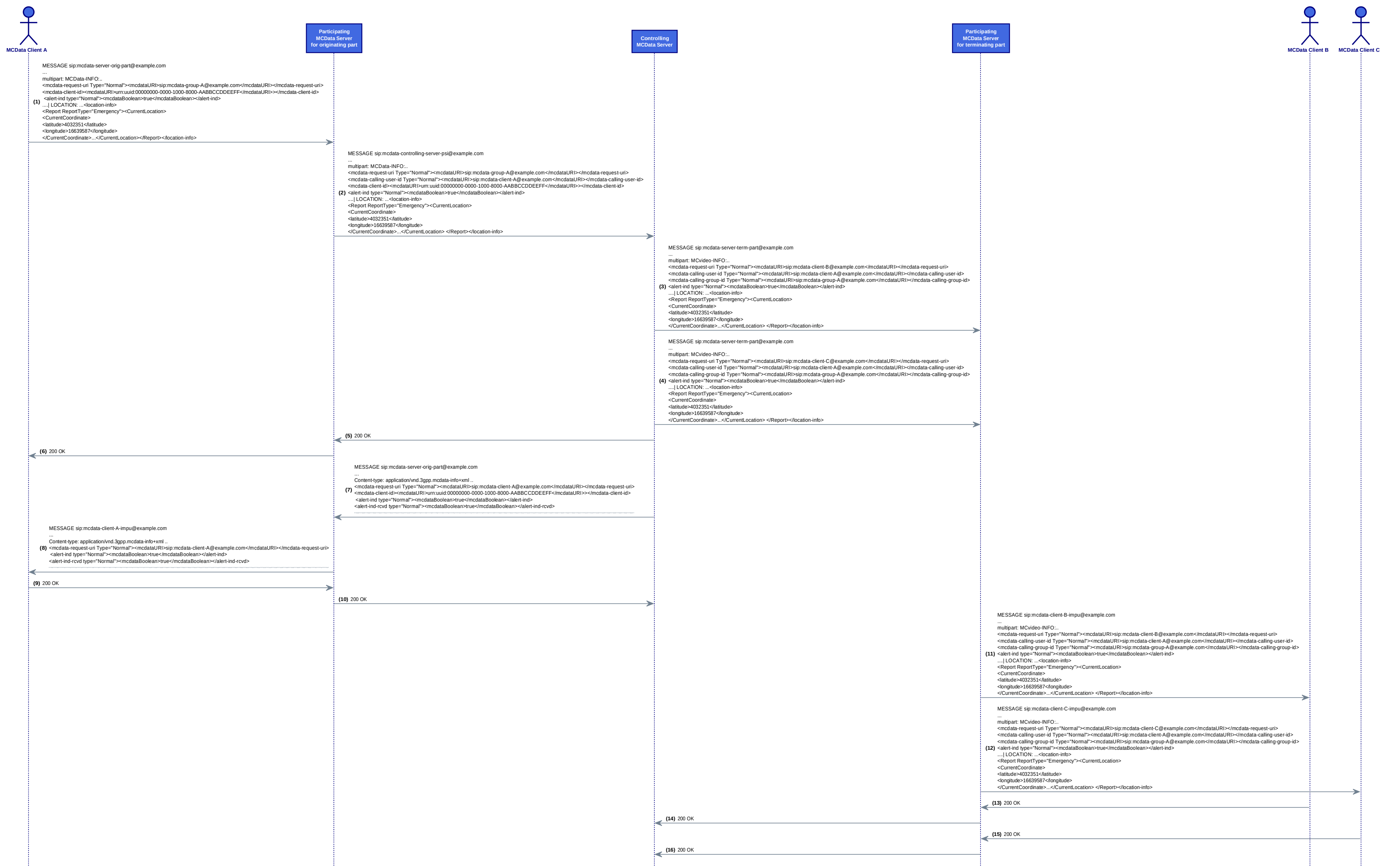

Figure 62bf: CONN-MCDATA/ONN/EMERG-ALERT/MSG/01 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 71bh: CONN-MCDATA/ONN/EMERG-ALERT/MSG/01 ITD

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/EMERG-ALERT/MSG/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for an MCData emergency alert using SIP message		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCData-Client_ONN-MCData (clause 6.2) • MCData-Part_AFFIL (clause 6.9) • MCData-Ctrl_GMS (clause 6.10)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system and users properly affiliated to the MCData group		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcdata_id_clientA@example.com) triggers an emergency alert to mcdata-group-A by creating a SIP message and setting the proper elements in the mcdata-info MIME body
	2	check	SIP MESSAGE received at the MCData 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 MCData controlling server loads the affiliated members of the mcdata-group-A (either preconfigured or retrieved from the GMS) and creates a SIP message per each of the "n" members
	5	check	The MCData controlling server sends a notification of the reception of the alert to User 1 through the originating participating.
	6	check	Alert indication received at mcdata_id_clientA
	7	check	"n" alert indicating SIP MESSAGES received at mcdata_id_clientX
	8	verify	An indication of the Emergency alert is shown to the MCData group members

7.2.123 MCData User cancels an emergency alert by sending a SIP MESSAGE [CONN-MCDATA/ONN/EMERG-ALERT/MSG/02]

As a precondition of this test case, an MCData group has entered the emergency state upon the submission of an explicit SIP MESSAGE as in [CONN-MCDATA/ONN/EMERG-ALERT/MSG/01] (clause 7.2.122). Then, upon receiving a request from the MCData user to send an MCData emergency alert cancellation to the indicated MCVideo group and following the procedure in clause 16.2.1.2 in ETSI TS 124 282 [8] the client will check that this is an authorized request and 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 16.2.2.1 in ETSI TS 124 282 [8]) will forward the message to the controlling. The controlling server (clause 16.2.3.2 in ETSI TS 124 282 [8]) will generate an outgoing SIP MESSAGE request for each of the affiliated but not joined members of the group with an application/vnd.3gpp.mcdata-info+xml MIME body with the <mcdatainfo> element containing the <mcdata-Params> element with the <mcdata-calling-user-id> element set to the value of the <mcdata-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

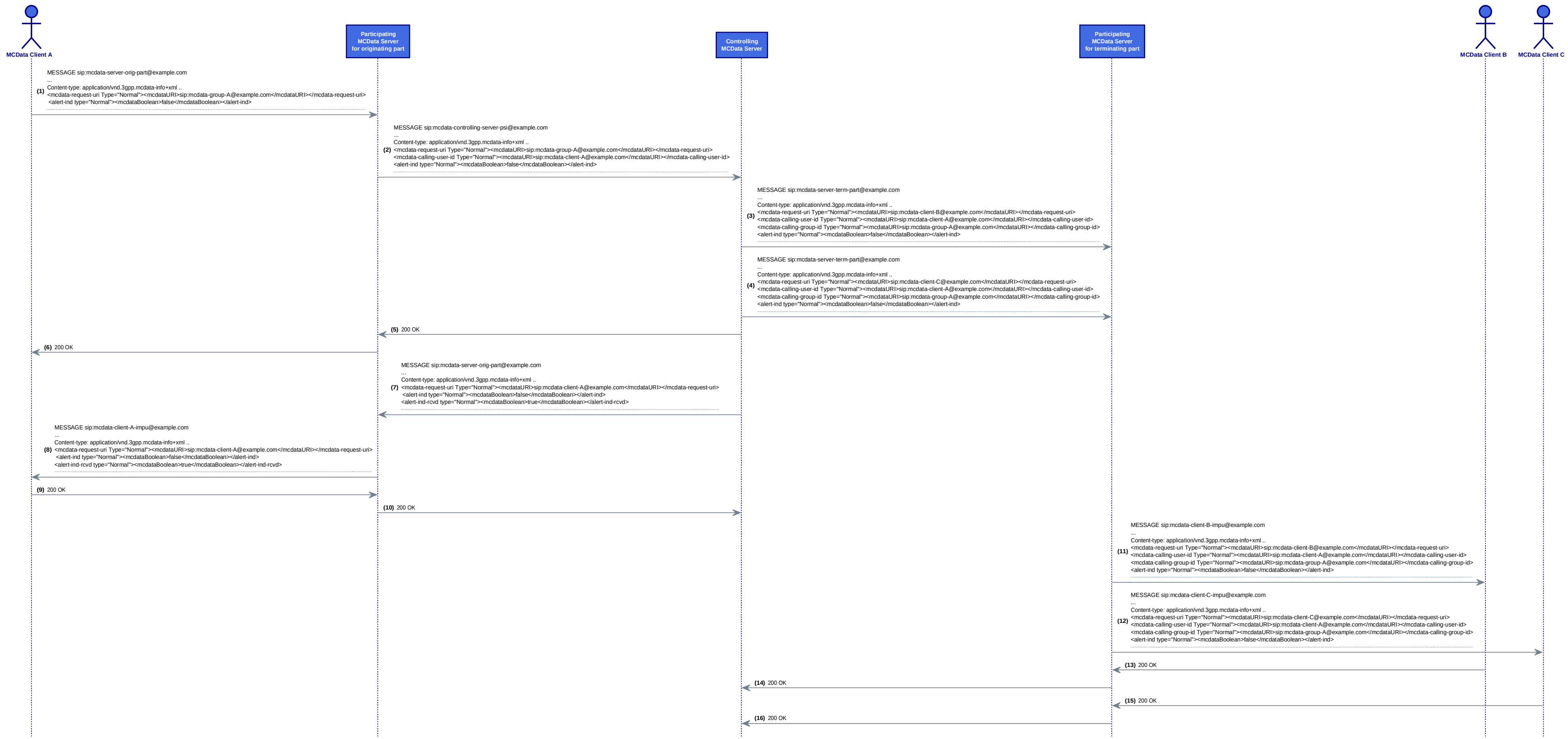

Figure 62bg: CONN-MCDATA/ONN/EMERG-ALERT/MSG/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71bi: CONN-MCVIDEO/ONN/EMERG-ALERT/MSG/02 ITD

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/EMERG-ALERT/MSG/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for the cancellation of an MCData emergency alert originated by another user		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCData-Client_ONN-MCData (clause 6.2) • MCData-Part_AFFIL (clause 6.9) • MCData-Ctrl_GMS (clause 6.10)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system and users properly affiliated to the MCData group • User 1 had sent emergency alert state		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcdata_id_clientA@example.com) triggers an emergency alert cancellation to mcdata-group-A by creating a SIP message and setting the <alert-ind> to false in the mcdata-info MIME body
	2	check	SIP MESSAGE received at the MCData 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 MCData controlling server loads the affiliated members of the mcdata-group-A (either preconfigured or retrieved from the GMS) and creates a SIP message per each of the "n" members
	5	check	The MCData 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 mcdata_id_clientA
	7	check	"n" alert cancellation indicating SIP MESSAGES received at mcdata_id_clientX
	8	verify	All MCData group members are notified of the cancellation and the originating client sets the internal status to "MDEA 1: no-alert"

7.2.124 MCData User cancels an emergency alert originated by other user by sending a SIP MESSAGE [CONN-MCDATA/ONN/EMERG-ALERT/MSG/03]

This test case is equivalent to [CONN-MCDATA/ONN/EMERG-ALERT/MSG/02] (clause 7.2.123) but it is another user the one cancelling the emergency alert.

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

In every subclauses 16 in ETSI TS 124 282 [8] analysed in the previous test cases the specific handling of the <originated-by> element is specified.

Message Sequence Diagram

Figure 62bh: CONN-MCDATA/ONN/EMERG-ALERT/MSG/03 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71bj: CONN-MCDATA/ONN/EMERG-ALERT/MSG/03 ITD

Interoperability Test Description			
Identifier	CONN-MCDATA/ONN/EMERG-ALERT/MSG/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for the cancellation of an MCDATA emergency alert originated by another user		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCData-Client_ONN-MCData (clause 6.2) • MCData-Part_AFFIL (clause 6.9) • MCData-Ctrl_GMS (clause 6.10)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MC system and users properly affiliated to the MCData group • User 1 had sent emergency alert state		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcdata_id_clientB@example.com) triggers an emergency alert cancellation to mcdata-group-A by creating a SIP message and setting the <alert-ind> to false in the mcdata-info MIME body and <originated-by> to mcdata_id_clientA
	2	check	SIP MESSAGE received at the MCData 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 MCData controlling server loads the affiliated members of the mcdata-group-A (either preconfigured or retrieved from the GMS) and creates a SIP message per each of the "n" members
	5	check	The MCData controlling server sends a notification of the reception of the alert cancellation to User 2 through the originating participating.
	6	check	Alert cancellation indication received at mcdata_id_clientA
	7	check	"n" alert cancellation indicating SIP MESSAGES received at mcdata_id_clientX
	8	verify	All MCData group members are notified of the cancellation and the originating client sets the internal status to "MDEA 1: no-alert"

7.2.125 MCPTT user sends a remotely initiated private call request to a remote MCPTT user [CONN-MCPTT/ONN/REMOTE/PRIV/01]

Clause 11.1.7 in ETSI TS 124 379 [9] describes the procedures for the on-network remotely initiated private call functionality.

According to clause 11.1.7.2, upon receiving a request from the MCPTT user to send a remotely initiated private call request to the remote MCPTT user for him/her to originate a private call to an identified MCPTT user, the MCPTT client, if the <allow-request-remote-init-private-call> element of the <ruleset> element is present in the MCPTT user profile document and is set to a value of "true", shall generate a SIP MESSAGE request in accordance with ETSI TS 124 229 [6] and IETF RFC 3428 [42]. The SIP MESSAGE will include an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcpttinfo> element containing the <mcptt-Params> element with the <anyExt> element containing the <request-type> element set to a value of "remotely-initiated-private-call-request",the <mcptt-called-party-id> element set to the MCPTT ID of the identified MCPTT user of the remotely initiated private call and the <notify-remote-user> element set to a value of "true" or "false" depending on whether the requesting MCPTT user has indicated that the remote MCPTT use has/has not to be notified of the remotely initiated private call request. Furthermote, in the SIP MESSAGE, a MIME resource-lists body with the MCPTT ID of the remote MCPTT user will be inserted, according to rules and procedures of IETF RFC 5366 [30].

NOTE 1: In this test case the notiy-remote-user will be set to "true" and the complex case where the identified user is not the originated user is depicted.

The originating participating server, according to clause 11.1.7.3.1 in ETSI TS 124 379 [9], after successfully checking again the ruleset in the user profile, shall copy the contents of the application/vnd.3gpp. mcptt-info+xml MIME body in the received SIP MESSAGE into the outgoing SIP MESSAGE and set the <mcptt-calling-user-id> element of the <mcpttinfo> element containing the <mcptt-Params> element to the MCPTT ID in the participating's bindings associated to the P-Asserted-Identity header received. It shall also copy the contents of the application/resource-lists MIME body in the received SIP MESSAGE request into the outgoing SIP MESSAGE request that will be finally sent to the public service identity of the controlling MCPTT function for the remotely initiated private call service for the requesting MCPTT user.

The controlling server, according to clause 11.1.7.4 in ETSI TS 124 379 [9], shall copy the contents of the application/vnd.3gpp. mcptt-info+xml MIME body in the received SIP MESSAGE into the outgoing SIP MESSAGE, shall copy the MCPTT ID of the MCPTT user listed in the MIME resources body of the incoming SIP MESSAGE request, into the <mcptt-request-uri> element, and submit it to the terminating participating server.

The terminating participating server, according to clause 11.1.7.3.2 in ETSI TS 124 379 [9], shall use the MCPTT ID present in the <mcptt-request-uri> to retrieve the binding between the MCPTT ID and public user identity shall generate an outgoing SIP MESSAGE request as specified in clause 6.3.2.2.11 in ETSI TS 124 379 [9].

The remote client, since the notify-remote-user is set to true in this test case, may indicate to the remote MCPTT user that a remotely initiated private call request to call the identified MCPTT user has been received. Later, depending on local policies an on-demand or pre-stablished private call will be invoked. In this example (on-demand) it shall invoke the procedures of clause 11.1.1.2.1.1 in ETSI TS 124 379 [9] to originate an MCPTT private call to the identified MCPTT user.

Upon successful completion of the private call the remote shall generate a SIP MESSAGE back to the originating user and include in an application/resource-lists+xml MIME body the MCPTT ID contained in the <mcptt-calling-user-id> element body of the received SIP MESSAGE request, an application/vnd.3gpp.mcptt-info+xml MIME body as specified with the <mcpttinfo> element containing the <mcptt-Params> element with the <anyExt> element containing the <response-type> element set to a value of "remotely-initiated-private-call-response" and the <mcptt-called-party-id> set to the MCPTT ID of the identified MCPTT user and a <remotely-initiated-call-outcome> element set to "success".

NOTE 2: The handling of such response is not specific in ETSI TS 124 379 [9] (V17.6.0) but refers to ETSI TS 124 229 [6] only.

Message Sequence Diagram

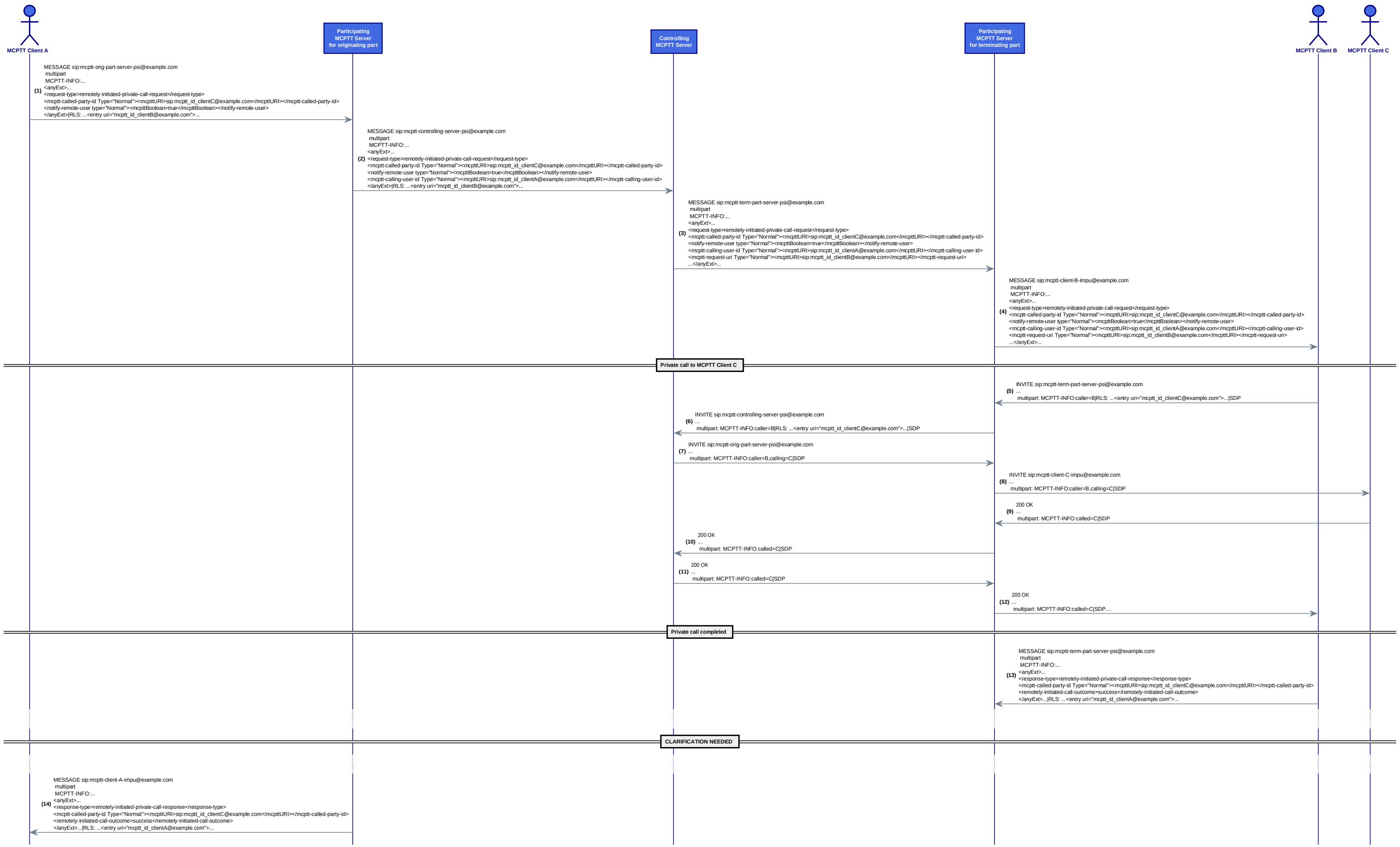

Figure 62bi: CONN-MCPTT/ONN/REMOTE/PRIV/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71bk: CONN-MCPTT/ONN/REMOTE/PRIV/01 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/REMOTE/PRIV/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling in a remotely initiated private call request to a remote MCPTT user		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) sends a remotely initiated private call request to User 2 (mcptt_id_clientB@example.com) for him/her to call User 3 (mcptt_id_clientC@example.com)
	2	check	SIP MESSAGE received at the MCPTT participating server of User 1
	3	check	The participating server checks user profiles, adapts the mcptt-info accordingly and creates an outgoing SIP MESSAGE to the controlling server
	4	check	The controlling server re-sends the SIP MESSAGE to the participating server of the User 2 (in the RLS)
	5	check	Terminating participating sends the SIP MESSAGE to the proper IMPU of User 2
	6	check	User 2 client initiates an on-demand private call towards User 3
	7	verify	Remotely initated private call properly stablished
	8	check	Since notify-remote-user is set to true, User 2 sends a response SIP MESSAGE with the outcome of the operation
	9	check	Response with outcome "success" is routed properly back to User 1
	10	verify	Call connected and remote client properly notified

7.2.126 MCPTT user requests to transfer an ongoing MCPTT private call to a target MCPTT user [CONN-MCPTT/ONN/TRANSF/PRIV/01]

Clause 11.1.8 in ETSI TS 124 379 [9] describes the procedures to transfer an MCPTT private call to another MCPTT user. Note that the term "requesting MCPTT user" is used to refer to the MCPTT user who sent a request to initiate a private call transfer, "transferred MCPTT user" is used to refer to the MCPTT user who is being transferred to a new "target MCPTT user" is used to refer to the MCPTT user that is the new target of the private call.

NOTE: The not announced case is considered in this test case.

More precisely, according to clause 11.1.8.2 in ETSI TS 124 379 [9], when an MCPTT user requests to transfer an ongoing MCPTT private call to a target MCPTT user, the MCPTT client, after checking that the <allow-call-transfer> element of the <ruleset> element is present in the requesting MCPTT user's MCPTT user profile document and set to "true", shall generate a SIP MESSAGE request in accordance with ETSI TS 124 229 [6] and IETF RFC 3428 [42]. The SIP MESSAGE will include an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcpttinfo> element containing the <mcptt-Params> element with the <anyExt> element containing the <request-type> element set to a value of "transfer-private-call-request",the <mcptt-called-party-id> element set to the MCPTT ID of the target MCPTT user. Furthermore, in the SIP MESSAGE, a MIME resource-lists body with the MCPTT ID of the remote MCPTT user will be inserted, according to rules and procedures of IETF RFC 5366 [30].

The originating participating server, according to clause 11.1.8.3.1 in ETSI TS 124 379 [9], checks both the ruleset in the user profile and that the "uri" attribute of the <entry> element of the application/resource-lists MIME body matches with one of the <entry> elements of the <AllowedMCPTTIdsForCallTransfer> element of the MCPTT user profile document. It the check is successful, it shall copy the contents of the application/vnd.3gpp. mcptt-info+xml MIME body in the received SIP MESSAGE into the outgoing SIP MESSAGE and set the <mcptt-calling-user-id> element of the <mcpttinfo> element containing the <mcptt-Params> element to the MCPTT ID in the participating's bindings associated to the P-Asserted-Identity header received. It shall also copy the contents of the application/resource-lists MIME body in the received SIP MESSAGE request into the outgoing SIP MESSAGE request that will be finally sent to the public service identity of the controlling MCPTT function for the private call transfer service for the requesting MCPTT user.

The controlling server, according to clause 11.1.8.4 in ETSI TS 124 379 [9], shall copy the contents of the application/vnd.3gpp. mcptt-info+xml MIME body in the received SIP MESSAGE into the outgoing SIP MESSAGE and the new target MCPTT ID in the MIME resources body of the incoming SIP MESSAGE request into the <mcptt-called-party-id> element in the <mcptt-Params> element of the <mcpttinfo> element in the application/vnd.3gpp.mcptt-info+xml MIME body of the outgoing SIP MESSAGE request. It shall also copy the MCPTT ID of the MCPTT user listed in the MIME resources body of the incoming SIP MESSAGE request, into the <mcptt-request-uri> element in the application/vnd.3gpp.mcptt-info+xml MIME body. Finally it will forward the SIP MESSAGE to the public service identity of the terminating participating MCPTT function associated to the MCPTT user identified by the MCPTT ID contained in the just fulfilled <mcptt-request-uri>.

The terminating participating server, according to clause 11.18.3.2 in ETSI TS 124 379 [9], shall use the MCPTT ID present in the <mcptt-request-uri> to retrieve the binding between the MCPTT ID and public user identity shall generate an outgoing SIP MESSAGE request as specified in clause 6.3.2.2.11 in ETSI TS 124 379 [9]. It will also all extract the MCPTT ID of the target MCPTT user from the <mcptt-called-party-id> element contained in the <anyExt> element of the <mcptt-Params> element of the <mcpttinfo> element contained in the application/vnd.3gpp.mcptt-info+xml MIME body contained in the received SIP MESSAGE request and cache the mapping between this and the MCPTT ID from the binding.

The transferred client, according to clause 11.1.8.2.2 in ETSI TS 124 379 [9] should indicate to the transferred MCPTT user that a request to transfer the previously ongoing call to a new target MCPTT user has been received, extract the MCPTT ID of the target MCPTT user from the <mcptt-called-party-id> element contained in the <anyExt> element of the <mcptt-Params> element of the <mcpttinfo> element contained in the application/vnd.3gpp.mcptt-info+xml MIME body contained in the received SIP MESSAGE request and (if local-policy indicates on-demand sessions need to be sued) shall invoke the procedures of clause 11.1.1.2.1.1 in ETSI TS 124 379 [9] to originate an MCPTT private call to the target MCPTT user.

Upon successful completion of the procedures of clause 11.1.1.2.1 in ETSI TS 124 379 [9] the MCPTT client shall generate a SIP MESSAGE request that shall include in an application/resource-lists+xml MIME body the MCPTT ID contained in the <mcptt-calling-user-id> element in the application/ vnd.3gpp.mcptt-info+xml MIME body of the received SIP MESSAGE request, <response-type> element set to a value of "transfer-private-call-response", the <mcptt-called-party-id> set to the MCPTT ID of the target MCPTT user called by the forwarded MCPTT user and a <forwarding-call-outcome> element set to a value of "success".

Message Sequence Diagram

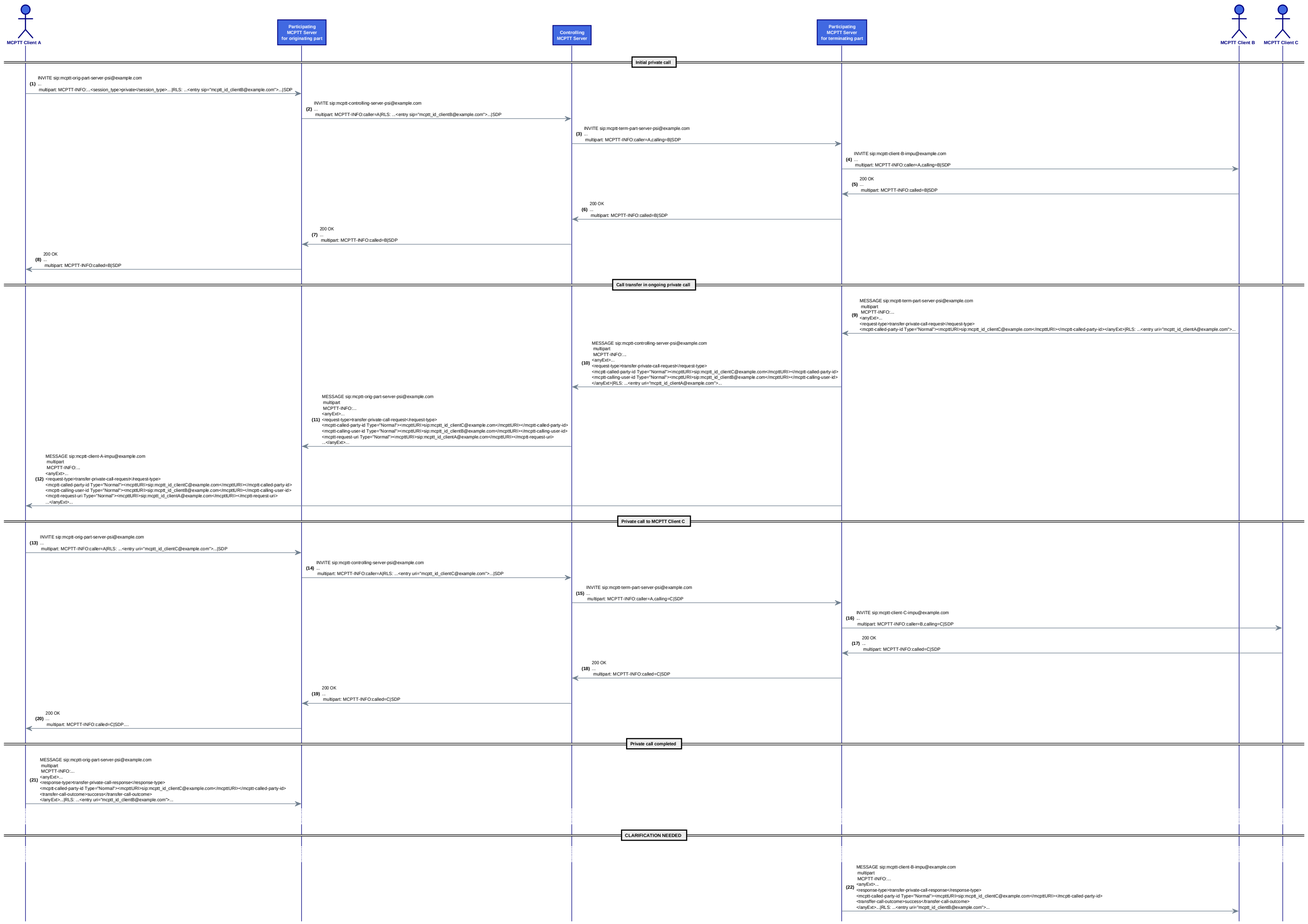

Figure 62bj: CONN-MCPTT/ONN/TRANSF/PRIV/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71bl: CONN-MCPTT/ONN/TRANSF/PRIV/01 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/TRANSF/PRIV/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling in the transfer to a remote MCPTT user of an ongoing mcptt private call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) setups a private call to User 2 (mcptt_id_clientB@example.com)
	2	check	Initial private call ongoing
	3	stimulus	User 2 decides to transfer the call to User 3 (mcptt_id_clientC@example.com) and sends a transfer request
	4	check	SIP MESSAGE received at the MCPTT participating server of User 2
	5	check	The participating server checks user profiles, adapts the mcptt-info accordingly and creates an outgoing SIP MESSAGE to the controlling server
	6	check	The controlling server re-sends the SIP MESSAGE to the participating server of the User 1 (in the RLS)
	7	check	Terminating participating sends the SIP MESSAGE to the proper IMPU of User 1
	8	check	User 1 client initiates an on-demand private call towards User 3
	9	verify	Transferred private call properly stablished
	10	check	User 1 sends a response SIP MESSAGE with the outcome of the operation
	11	check	Response with outcome "success" is routed properly back to User 2
	12	verify	Call properly transferred and requesting MCPTT user properly notified

7.2.127 MCPTT user decides to forward an incoming MCPTT private call to a new target MCPTT ID [CONN-MCPTT/ONN/FORW/PRIV/01]

Clause 11.1.9 in ETSI TS 124 379 [9] describes the procedures to transfer an MCPTT private call to another MCPTT user based on manual user input. Note that the term "requesting MCPTT user" is used to refer to the MCPTT user who sent a request to initiate a private call forwarding based on manual user input, "forwarded MCPTT user" is used to refer to the MCPTT user who is being forwarded to a new "target MCPTT user", the MCPTT user that is the new target of the private call.

More precisely, according to clause 11.1.9.2 in ETSI TS 124 379 [9], when an MCPTT user decides to forward an incoming MCPTT private call to a new target MCPTT ID (or functional alias) instead of accepting the incoming MCPTT private call, the MCPTT client, after checking that the <allow-call-fwd-manual-any> element of the <ruleset> element is present in the requesting MCPTT user's MCPTT user profile document and set to "true", shall generate a SIP MESSAGE request in accordance with ETSI TS 124 229 [6] and IETF RFC 3428 [42]. The SIP MESSAGE will include an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcpttinfo> element containing the <mcptt-Params> element with the <anyExt> element containing the <request-type> element set to a value of "forward-private-call-request",the <mcptt-called-party-id> element set to the MCPTT ID of the target MCPTT user and <forwarding-reason> element set to a value of "Manual-Input". Furthermore, in the SIP MESSAGE, a MIME resource-lists body with the MCPTT ID of the remote MCPTT user will be inserted, according to rules and procedures of IETF RFC 5366 [30].

The originating participating server (similarly to previous test cases), according to clause 11.1.9.3.1 in ETSI TS 124 379 [9], after successfully checking again the ruleset in the user profile, shall copy the contents of the application/vnd.3gpp. mcptt-info+xml MIME body in the received SIP MESSAGE into the outgoing SIP MESSAGE and set the <mcptt-calling-user-id> element of the <mcpttinfo> element containing the <mcptt-Params> element to the MCPTT ID in the participating's bindings associated to the P-Asserted-Identity header received. It shall also copy the contents of the application/resource-lists MIME body in the received SIP MESSAGE request into the outgoing SIP MESSAGE request that will be finally sent to the public service identity of the of the controlling MCPTT function for the forwarding private call service for the requesting MCPTT user.

The controlling server, according to clause 11.1.9.4 in ETSI TS 124 379 [9], shall copy the contents of the application/vnd.3gpp. mcptt-info+xml MIME body in the received SIP MESSAGE into the outgoing SIP MESSAGE and the new target MCPTT ID in the MIME resources body of the incoming SIP MESSAGE request into the <mcptt-called-party-id> element in the <mcptt-Params> element of the <mcpttinfo> element in the application/vnd.3gpp.mcptt-info+xml MIME body of the outgoing SIP MESSAGE request.

The terminating participating server, according to clause 11.1.9.3.2, shall use the MCPTT ID present in the <mcptt-request-uri> to retrieve the binding between the MCPTT ID and public user identity shall generate an outgoing SIP MESSAGE request as specified in clause 6.3.2.2.11.

The remote client, according to clause 11.1.9.2.2, should indicate to the forwarded MCPTT user that a request to forward the previously initiated call to a new target MCPTT user has been received, extract the MCPTT ID of the target MCPTT user from the <mcptt-called-party-id> element contained in the <anyExt> element of the <mcptt-Params> element of the <mcpttinfo> element contained in the application/vnd.3gpp.mcptt-info+xml MIME body contained in the received SIP MESSAGE request and (if local-policy indicates on-demand sessions need to be sued) shall invoke the procedures of clause 11.1.1.2.1.1 in ETSI TS 124 379 [9] to originate an MCPTT private call to the target MCPTT user.

Upon successful completion of the procedures of clause 11.1.1.2.1 in ETSI TS 124 379 [9] the MCPTT client shall generate a SIP MESSAGE request that shall include in an application/resource-lists+xml MIME body the MCPTT ID contained in the <mcptt-calling-user-id> element in the application/ vnd.3gpp.mcptt-info+xml MIME body of the received SIP MESSAGE request, <response-type> element set to a value of "forwarding-private-call-response", the <mcptt-called-party-id> set to the MCPTT ID of the target MCPTT user called by the forwarded MCPTT user and a <forwarding-call-outcome> element set to a value of "success".

This response will be routed towards the requesting MCPTT user.

Message Sequence Diagram

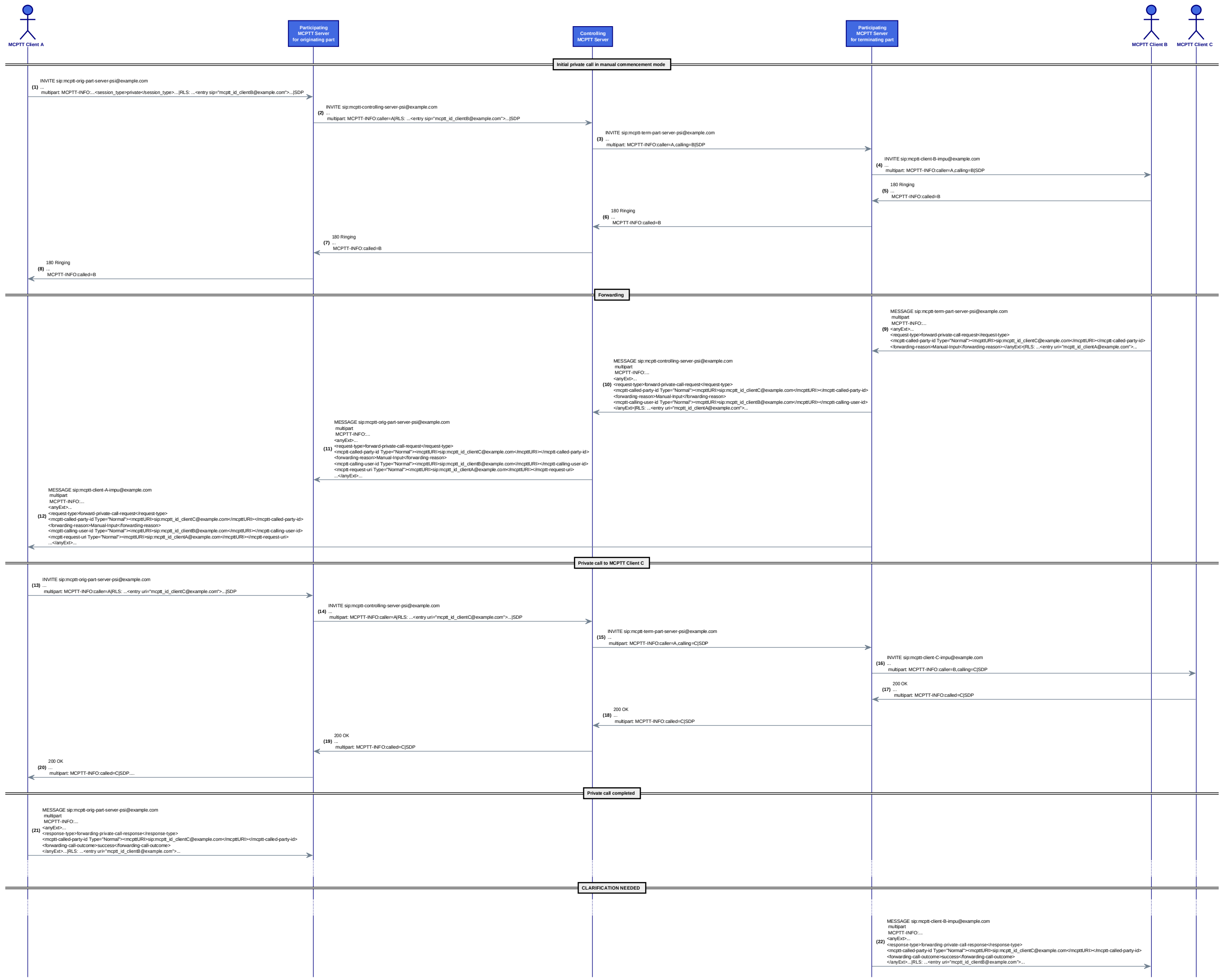

Figure 62bk: CONN-MCPTT/ONN/FORW/PRIV/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71bm: CONN-MCPTT/ONN/FORW/PRIV/01 ITD

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">CONN-MCPTT/ONN/FORW/PRIV/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling of a private call manually forwarded to a new target user</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCPTT-Client_ONN-MCPTT-Rel14, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-Rel14, MCPTT-Part_AFFIL
• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.7)
• MCPTT-Ctrl_ONN-MCPTT-Rel14, MCPTT-Ctrl_AFFIL (clause 6.8)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td></td><td>1</td><td>stimulus</td><td>User 1 (mcptt_id_clientA@example.com) setups a private call to User 2 (mcptt_id_clientB@example.com) using manual commencement mode</td></tr>
<tr><td></td><td>2</td><td>check</td><td>SIP INVITE properly reaching User 2</td></tr>
<tr><td></td><td>3</td><td>stimulus</td><td>User 2 decides to manually forward the call to User 3 (mcptt_id_clientC@example.com) and sends a forwarding request</td></tr>
<tr><td></td><td>4</td><td>check</td><td>SIP MESSAGE received at the MCPTT participating server of User 2</td></tr>
<tr><td></td><td>5</td><td>check</td><td>The participating server checks user profiles, adapts the mcptt-info accordingly and creates an outgoing SIP MESSAGE to the controlling server</td></tr>
<tr><td></td><td>6</td><td>check</td><td>The controlling server re-sends the SIP MESSAGE to the participating server of the User 1 (in the RLS)</td></tr>
<tr><td></td><td>7</td><td>check</td><td>Terminating participating sends the SIP MESSAGE to the proper IMPU of User 1</td></tr>
<tr><td></td><td>8</td><td>check</td><td>User 1 client initiates an on-demand private call towards User 3</td></tr>
<tr><td></td><td>9</td><td>verify</td><td>Forwarded private call properly stablished</td></tr>
<tr><td></td><td>10</td><td>check</td><td>User 1 sends a response SIP MESSAGE with the outcome of the operation</td></tr>
<tr><td></td><td>11</td><td>check</td><td>Response with outcome "success" is routed properly back to User 2</td></tr>
<tr><td></td><td>12</td><td>verify</td><td>Call connected and requesting MCPTT user properly notified</td></tr>
</table>

7.2.128 MCPTT User initiates a prearranged MCPTT Group Call using pre-established session: Emergency Group Call [CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/07]

According to clause 10.1.1.2.2.1 in ETSI TS 124 379 [9] upon receiving a request from an MCPTT user to establish an MCPTT group session using an MCPTT group identity identifying a prearranged MCPTT group within the pre-established session, the MCPTT client shall generate a SIP REFER request outside a dialog as specified in IETF RFC 3515 [25] as updated by IETF RFC 6665 [26] and IETF RFC 7647 [27]. Such REFER would have the Resource-Priority header and <emergency-ind> element of the application/vnd.3gpp.mcptt-info+xml MIME body properly set and encoded.

Once the call arrives at the originating participating, according to step 7) in clause 10.1.1.3.1.2 in ETSI TS 124 379 [9] and, since received SIP REFER request includes an application/vnd.3gpp.mcptt-info+xml MIME body with an <emergency-ind> element, the originating participating server shall validate the request as described in clause 6.3.2.1.8.3 in ETSI TS 124 379 [9] (and therefore clause 6.3.3.1.17 in ETSI TS 124 379 [9]). It shall first generate a final SIP 200 (OK) response to the "SIP REFER request for a pre-established session" according to ETSI TS 124 229 [6] and send the response towards the MCPTT client.

Then it will shall generate a SIP INVITE request as specified in clause 6.3.2.1.4 in ETSI TS 124 379 [9], with the Request-URI of the SIP INVITE request to the public service identity associated to the group identity within the <entry> element of the application/resource-lists MIME body referenced by the "cid" URL contained in the Refer-To header field of the SIP REFER request. It will copy the group identity from the "uri" attribute of the <entry> element of the application/resource-lists MIME body pointed to by the "cid" URL in the Refer-to header field of the SIP REFER request, to the <mcpttrequest-uri> element of the application/vnd.3gpp.mcptt-info+xml MIME body in the SIP INVITE request. Additionally, since the received SIP REFER request contained a Resource-Priority header field, the participating shall include that in the outgoing SIP INVITE request.

The controlling, following clause 10.1.1.4.2 in ETSI TS 124 379 [9] and upon receiving of a "SIP INVITE request for controlling MCPTT function of an MCPTT group" with with an <emergency-ind> element included, shall validate the request as described in clause 6.3.3.1.17 in ETSI TS 124 379 [9].

It will later retrieve the group document maintained by the GMS for the group identity contained in the SIP INVITE request and carry out initial processing as specified in clause 6.3.5.2 in ETSI TS 124 379 [9] and perform the actions as described in clause 6.3.3.2.2 in ETSI TS 124 379 [9] (cache SIP feature tags, if received in the Contact header field and if the specific feature tags are supported) and check authorization of the calling mcptt-id.

Since no session would be ongoing for that group call according to step 14) d) the controlling shall check if a Resource-Priority header field is included in the incoming SIP INVITE request, may apply any preferential treatment to the SIP request and shall create a prearranged group session and allocate an MCPTT session identity for the prearranged group call. Additionally, according to 14) g) since the group identity in the SIP INVITE request is an MCPTT group ID it shall:

i) determine the members to invite to the prearranged MCPTT group call as specified in clause 6.3.5.5 in ETSI TS 124 379 [9];

ii) if necessary, shall start timer TNG1 (acknowledged call setup timer) according to the conditions stated in clause 6.3.3.3 in ETSI TS 124 379 [9]; and

iii) if the received SIP INVITE contains an alert indication set to a value of "true" shall cache the information that the MCPTT user has initiated an MCPTT emergency call.

NOTE: Since if the in-progress emergency state of the group would be originally set to a value of "false" the controlling would then set the value of the in-progress emergency state of the group to "true" and start timer TNG2 (in-progress emergency group call timer).

It will then according to v) invite each group member determined in step 13) g) i) above, to the group session, as specified in clause 10.1.1.4.1.1; and shall interact with the media plane as specified in ETSI TS 124 380 [10] clause 6.3.

Finally, in the terminating side the terminating participating server should follow 10.1.1.3.2 but, considering this is an emergency call and the existing prestablished session on the terminating side for a specific user is for a "regular" ones the terminating participating should follow 8.3.2.2 and shall generate a SIP UPDATE request (or a SIP re-INVITE) including a SDP offer (and ICE candidates) according to ETSI TS 124 229 [6] and shall send the SIP request towards the MCPTT client.

The terminating client, following clause 10.1.1.2.2.2 in ETSI TS 124 379 [9], upon receiving a SIP re-INVITE request within a pre-established session without an associated MCPTT call shall follow the procedures in clause 10.1.1.2.1.2 in ETSI TS 124 379 [9].

More specifically according to step 3) it shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of ETSI TS 124 379 [9] to act upon an included Resource-Priority header field and (according to step 4)) since the SIP INVITE request contains an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcpttinfo> element containing the <mcptt-Params> element with the <emergency-ind> element set to a value of "true" it should display to the MCPTT user an indication that this is a SIP INVITE request for an MCPTT emergency group call and should display the MCPTT ID of the originator of the MCPTT emergency group call contained in the <mcptt-calling-user-id> element.

On receipt of the SIP 200 (OK) response the participating MCPTT function shall interact with media plane as specified in ETSI TS 124 380 [10].

The controlling, following last steps in clause 10.1.1.4.2 in ETSI TS 124 379 [9] and once enough 200 OK are received (meaning the local counter of the number of SIP 200 (OK) responses received from invited members is equal to the value of the <on-network-minimum-number-to-start> element of the group document), will send a 200 OK to the participating.

The participating, back in clause 10.1.1.3.1.2, upon receiving a SIP 200 (OK) response for the SIP INVITE request from the controlling, shall interact with the media plane as specified in ETSI TS 124 380 [10].

Since the received SIP 2xx response was in response to a request for an MCPTT group call containing a Resource-Priority header field populated for an MCPTT emergency group call or MCPTT imminent peril group call as specified in clause 6.3.2.1.8.4 and does not contain a Warning header field as specified in clause 4.4 with the warning text containing the mcptt-warn-code set to "149", it shall generate a SIP re-INVITE request to be sent towards the MCPTT client within the pre-established session as specified in clause 6.3.2.1.8.5 and send the SIP re-INVITE request towards the MCPTT client according to ETSI TS 124 229 [6].

On the calling client according to clause 10.1.1.2.1.6 in ETSI TS 124 379 [9] upon receipt of a re-INVITE request with the <mcpttinfo> element containing the <mcptt-Params> element with the <emergency-ind> element set to a value of "true", should display to the MCPTT user an indication of the MCPTT emergency alert and associated Information and set the proper emergency group state.

According to ETSI TS 124 380 [10] clause 4.2.3.3.2 over this pre-established session, the participating MCPTT function informs the originating MCPTT client the acceptance or rejection decision of the controlling MCPTT function by sending Connect or Disconnect messages respectively over MCPTT-4 reference point.

Message Sequence Diagram

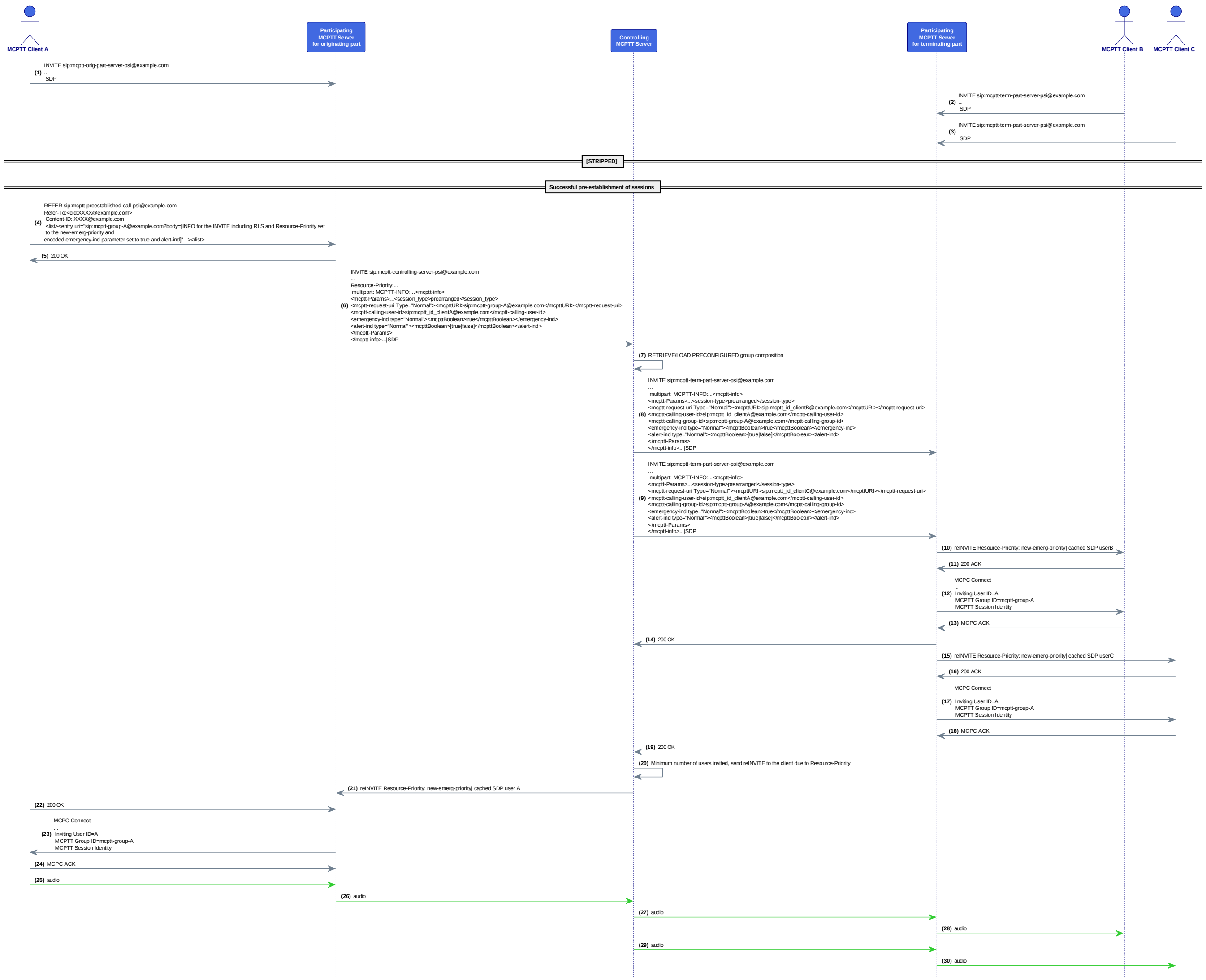

Figure 62bl: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/07 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71bn: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/07 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/08		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for a prearranged emergency Group Call using pre-established session		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Calling user is affiliated to the called group • Pre-established sessions		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	Calling user triggers an emergency group 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	INVITE received at the MCPTT controlling server
	4	check	"n" INVITEs received at the respective MCPTT participating servers
	5	check	"n" re-INVITEs from the terminating participating arriving at each client
	6	check	"n" MCPC procedures to signal the new call to every mcptt_id_clientX
	7	check	After needed 200 OK reaching the controlling it triggers a re-INVITE to the calling user to modify the pre-established
	8	check	re-INVITE accepted by the MCPTT client
	9	check	MCPC procedure to acknowledge the call to the calling user
	10	verify	Emergency prearranged group call established

7.2.129 MCPTT User initiates a prearranged MCPTT Group Call using pre-established session: Upgrade to in progress emergency or imminent peril [CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/08]

According to clause 10.1.1.2.1.3 in ETSI TS 124 379 [9] during an ongoing prearranged group call and upon receiving a request from an MCPTT user to upgrade the MCPTT group call to an emergency condition or an imminent peril condition on an MCPTT prearranged group, the MCPTT client shall generate a SIP re-INVITE request and include an application/vnd.3gpp.mcptt-info+xml MIME body by following the procedures in clause 6.2.8.1.1 in ETSI TS 124 379 [9]. Since the MCPTT user has requested to upgrade the MCPTT group call to an MCPTT emergency call, not only the application/vnd.3gpp.mcptt-info+xml MIME body would follow the procedures in clause 6.2.8.1.1 but also a Resource-Priority header field will be included according to procedures in clause 6.2.8.1.2 in ETSI TS 124 379 [9] (actually using the values retrieved according to clause 6.2.8.1.15 in ETSI TS 124 379 [9]).

Since the SIP re-INVITE request is to be sent within a pre-established session, it shall include an SDP offer based upon the parameters already negotiated for the preestablished session, since the media-level section for the offered MCPTT speech media stream and the media-level section of the offered media-floor control entity are expected to be the same as was negotiated in the existing pre-established session.

The participating, according to clause 10.1.1.3.1.3 in ETSI TS 124 379 [9], upon receipt of a SIP re-INVITE request for an MCPTT session identifying a pre-established session, shall generate an outgoing SIP re-INVITE request as specified in clause 6.3.2.1.9 (basically copying the received bodies) including the MCPTT ID of the originating user in <mcptt-calling-user-id> element of the application/vnd.3gpp.mcptt-info+xml MIME body of the SIP INVITE request, include in the SIP re-INVITE request an SDP offer based upon the previously negotiated SDP for the pre-established session as specified in clause 6.3.2.1.1.2 and the Resource-Priority header field, shall include a Resource-Priority header field with the contents set as in the received Resource-Priority header field and shall forward the SIP re-INVITE request to the controlling.

The controlling, according to clause 10.1.1.4.7 in ETSI TS 124 379 [9], upon receipt of a SIP re-INVITE request for an MCPTT session identity identifying an on-demand prearranged MCPTT group session, since the request includes an application/vnd.3gpp.mcptt-info+xml MIME body with an<emergency-ind> element included shall validate it as described in clause 6.3.3.1.17. Furthermore, since according to clause 6.3.3.1.13.2 it is an authorized request to initiate an MCPTT emergency group call, the controlling MCPTT function -step 6) a)- shall cache the MCPTT ID of the MCPTT user that has initiated an MCPTT emergency call. Since the in-progress emergency state of the group was originally set to a value of "false" -step 6) d)- the controlling shall set the value of the in-progress emergency state of the group to "true", start timer TNG2 (in-progress emergency group call timer) and generate SIP re-INVITE requests for the MCPTT emergency group call to the other participants of the MCPTT group call as specified in clause 6.3.3.1.6 (with cached SDP).

It will later send the SIP re-INVITEs towards the other participants of the MCPTT group call and, for each of other affiliated members of the group that are not participating in the call generate a SIP MESSAGE request notification of the MCPTT user's emergency indication as specified in clause 6.3.3.1.11 in ETSI TS 124 379 [9] (note this is not considered in the sample sequence diagram).

The terminating participating server(s), according to clause 10.1.1.3.6 in ETSI TS 124 379 [9], upon receipt of the SIP re-INVITE request(s) for a terminating MCPTT client of a MCPTT group containing an emergency, since a Resource-Priority header field is included in the incoming SIP INVITE request it will perform further actions outside the scope of ETSI TS 124 379 [9] to act upon an included Resource-Priority header field. It will later generate an outgoing SIP re-INVITE request as specified in clause 6.3.2.2.10 (copying the bodies and Resource-Priority and adding the option "tdialog", optionally adding a Resource-Share option).

It shall then send the SIP re-INVITE request towards the MCPTT client(s). Those, according to clause 10.1.1.2.1.6 in ETSI TS 124 379 [9], should display to the MCPTT user the MCPTT ID of the originator of the MCPTT emergency group call, an indication that this is an MCPTT emergency group call and if the <mcpttinfo> element containing the <mcptt-Params> element contains an <alert-ind> element set to "true", should display to the MCPTT user an indication of the MCPTT emergency alert and associated information. They shall set the MCPTT emergency group state to "MEG 2: in-progress" after checking that a Resource-Priority header field is included in the incoming SIP re-INVITE request may perform further actions outside the scope of ETSI TS 124 379 [9] to act upon an included Resource-Priority header.

They shall later accept the SIP re-INVITE request and generate a SIP 200 (OK) response.

Back in clause 10.1.1.3.6 the terminating participating, upon receiving a SIP 200 (OK) response to the above SIP re-INVITE request sent to the MCPTT client, shall generate a SIP 200 (OK) response as described in the clause 6.3.2.2.4.2.

Back in clause 10.1.1.4.7 the controlling, upon receiving that SIP 200 (OK) response to the SIP re-INVITE request the controlling MCPTT function shall interact with the media plane as specified in ETSI TS 124 380 [10].

In clause 10.1.1.3.1.3 the originating participating, upon receipt of a SIP 2xx response to the SIP re-INVITE shall generate a SIP 200 (OK) response as specified in the clause 6.3.2.1.5.2, with an SDP answer as specified in the clause 6.3.2.1.2.1 shall send the SIP 200 (OK) response towards the MCPTT client.

Finally, back in clause 10.1.1.2.1.3 on receiving a SIP 2xx response to the SIP re-INVITE request the initiating MCPTT client shall interact with the user plane as specified in ETSI TS 124 380 [10]; and shall perform the actions specified in clause 6.2.8.1.4 (set the MCPTT emergency group call state to "MEGC 3: emergency-call-granted").

Message Sequence Diagram

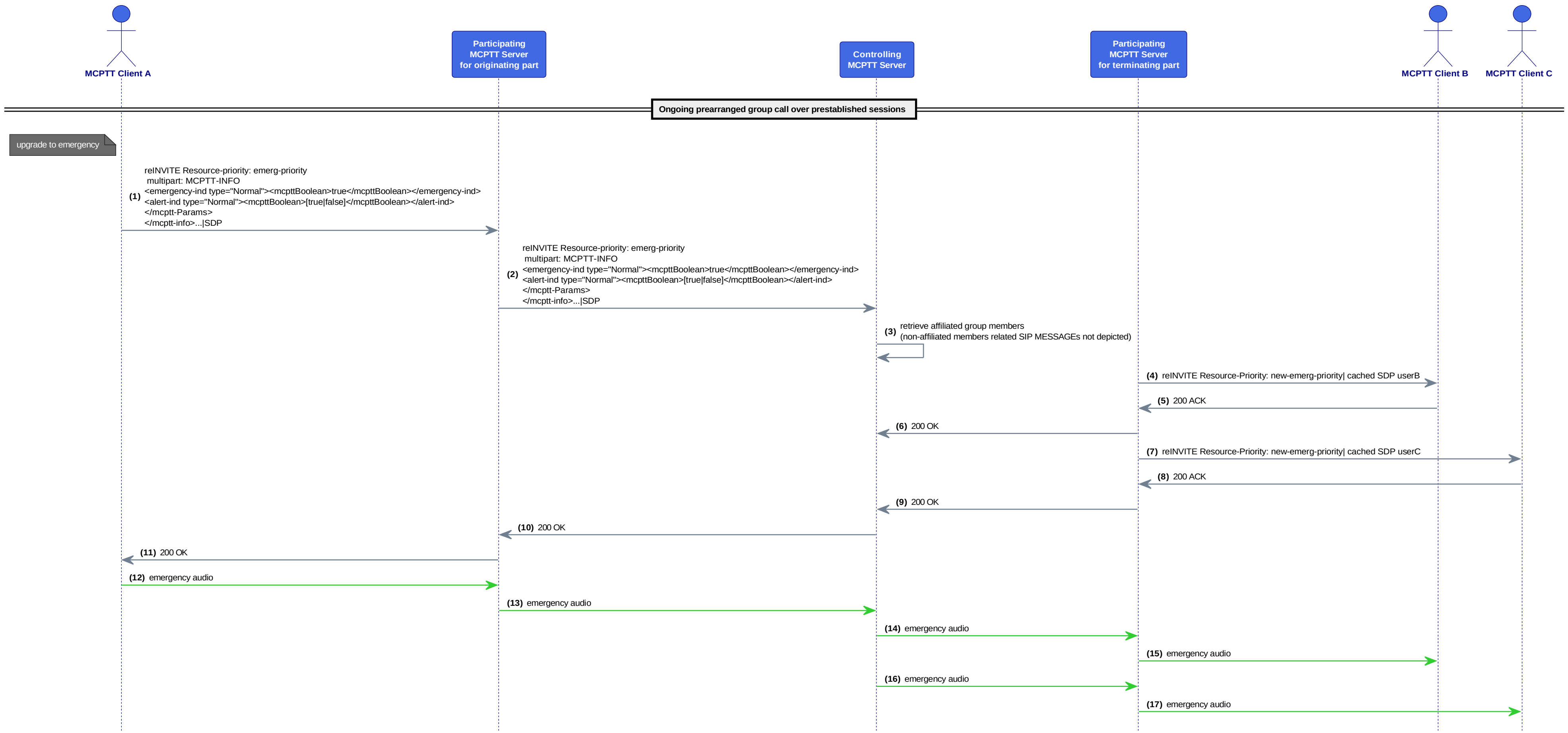

Figure 62bm: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/08 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71bo: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/08 ITD

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/08</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for upgrading an ongoing prearranged Group Call using pre-established sessions to emergency</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL
• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)
• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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
• Calling user is affiliated to the called group
• Pre-established sessions and ongoing prearranged group call</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="8">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>Calling user upgrade to an emergency group call by sending a re-INVITE</td></tr>
<tr><td>2</td><td>check</td><td>re-INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS</td></tr>
<tr><td>3</td><td>check</td><td>re-INVITE received at the MCPTT controlling server</td></tr>
<tr><td>4</td><td>check</td><td>"n" re-INVITEs received at the respective MCPTT participating servers</td></tr>
<tr><td>5</td><td>check</td><td>"n" re-INVITEs from the terminating participating arriving at each client with cached SDP</td></tr>
<tr><td>6</td><td>check</td><td>200 OK replied back to the originating</td></tr>
<tr><td>7</td><td>verify</td><td>Group call upgraded to emergency and all group A states in the controlling and clients updated accordingly</td></tr>
</table>

7.2.130 MCPTT User cancels the emergency condition of a prearranged MCPTT Group Call using pre-established session [CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/09]

According to clause 10.1.1.2.1.4 in ETSI TS 124 379 [9] "MCPTT in-progress emergency cancel" that covers both on-demand session and pre-established sessions, upon receiving a request from an MCPTT user to cancel the in-progress emergency condition while in an ongoing prearranged group call the MCPTT client shall generate a SIP re-INVITE according to clause 6.2.8.1.14 with the <mcpttinfo> element containing the <mcptt-Params> element with the <session-type> element set to a value of "prearranged"; and the <mcptt-request-uri> element set to the group identity and a SDP offer based upon the parameters already negotiated for the pre-established session. Therefore, the media-level section for the offered MCPTT speech media stream and the media-level section of the offered media-floor control entity are expected to be the same as was negotiated in the existing pre-established session.

The re-INVITE will include a Resource-Priority header field and comply with the procedures in clause 6.2.8.1.2 in ETSI TS 124 379 [9].

The behavior of the participating and controlling servers follows the equivalent in [CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/09] but processing the proper step (i.e. the controlling step 8) in clause 10.1.1.4.7 in ETSI TS 124 379 [9], cancelling the group emergency state in the controlling and stopping timer TNG2).

Back in clause 10.1.1.2.1.4 in ETSI TS 124 379 [9], on receiving a SIP 2xx response to the SIP re-INVITE request, the MCPTT client, shall set the MCPTT emergency group state of the group to "MEG 1: no-emergency", shall set the MCPTT emergency group call state of the group to "MEGC 1: emergency-gc-capable" and the SIP 2xx response to the SIP request for a priority group call does not contain a Warning header field as specified in clause 4.4 with the warning text containing the mcptt-warn-code set to "149", shall set the MCPTT emergency alert state to "MEA 1: no-alert".

Message Sequence Diagram

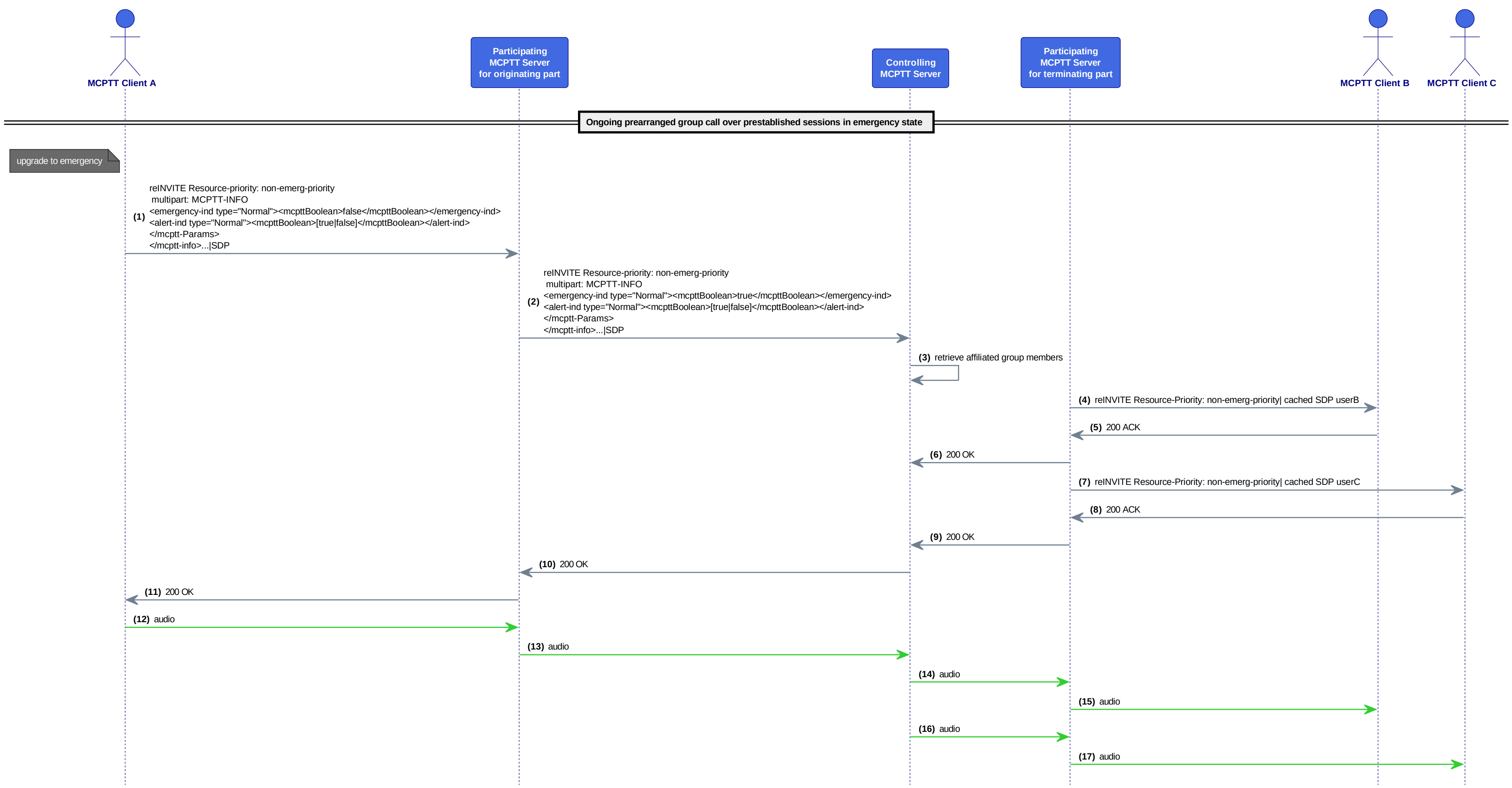

Figure 62bn: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/09 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71bp: CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/09 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/GROUP/PREA/PRE/NFC/08		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for cancelling the emergency state of an ongoing prearranged Group Call using pre-established sessions		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Calling user is affiliated to the called group • Pre-established sessions and ongoing prearranged emergency group call		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	Calling user cancels the emergency state of an ongoing group call by sending a re-INVITE
	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	"n" re-INVITEs received at the respective MCPTT participating servers
	5	check	"n" re-INVITEs from the terminating participating arriving at each client with cached SDP
	6	check	200 OK replied back to the originating
	7	verify	Group call downgraded and all group A states in the controlling and clients updated accordingly

7.2.131 MCPTT User initiates a pre-established private MCPTT emergency call in automatic commencement mode with floor control [CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/03]

This test case is equivalent to [CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/01] but adding the emergency-ind element to true on the originating side.

Therefore following clause 11.1.1.2.2.1 in ETSI TS 124 379 [9] and emergency considerations (checking permissions in clauses 6.2.8.3.1.1 and 6.2.8.3.2) a SIP REFER will be sent with the proper Resource-priority (clause 6.2.8.3.3) and <emergency-ind> element will be set to true and properly encoded.

The participating, following clause 11.1.1.3.1.2 step 19) since the received SIP REFER request contained a Resource-Priority header field, shall include in the outgoing SIP INVITE request a Resource-Priority header field set to the value indicated in the Resource-Priority header field of the received SIP REFER request.

The controlling, according to clause 11.1.1.4.2 step 9 and since the received SIP INVITE request contains an emergency indication set to a value of "true" and the originating MCPTT user is not in an in-progress emergency private call state with the targeted MCPTT user and the <session-type> in the SIP INVITE request is set to "private", shall cache the information that the MCPTT user has initiated an MCPTT emergency private call to the targeted user, perform actions as described in clause 6.3.3.2.2 (i.e. cache SIP feature tags) and allocate an MCPTT session identity for the MCPTT session.

The participating will generate and forward the SIP INVITE to the controlling and, upon its SIP 200 (OK) response and as stated in clause 11.1.1.3.1.2 a SIP 200 (OK) shall interact with the media plane as specified in ETSI TS 124 380 [10] and since "the received SIP 2xx response was in response to a request for an MCPTT emergency private call and does not contain a Warning header field as specified in clause 4.4 with the warning text containing the mcptt-warn-code set to "149"", "shall generate a SIP re-INVITE request to be sent towards the MCPTT client within the pre-established session as specified in clause 6.3.2.1.8.6, send the SIP re-INVITE request towards the MCPTT client within the pre-established session.

NOTE: In Figure 62bo the MCPC Connect and re-INVITE procedures are shown in a specific order while they can be triggered in paralel.

As specificed in the last step of clause 11.1.1.2.2.1 the MCPTT client should receive a re-INVITE: "Upon receipt of a SIP re-INVITE request within the pre-established session targeted by the sent SIP REFER request, the MCPTT client"…. "2) if the sent SIP REFER request was a request for an MCPTT emergency private call". Then it would check the emergency status accept the SIP re-INVITE request and generate a SIP 200 (OK) response with the proper SDP answering.

Later on call release by interaction with the media plane as specified in clause 9.2.2 of ETSI TS 124 380 [10], since the sent SIP REFER request was a request for an MCPTT emergency private call, the MCPTT client shall perform the procedures specified in clause 6.2.8.1.18.

Message Sequence Diagram

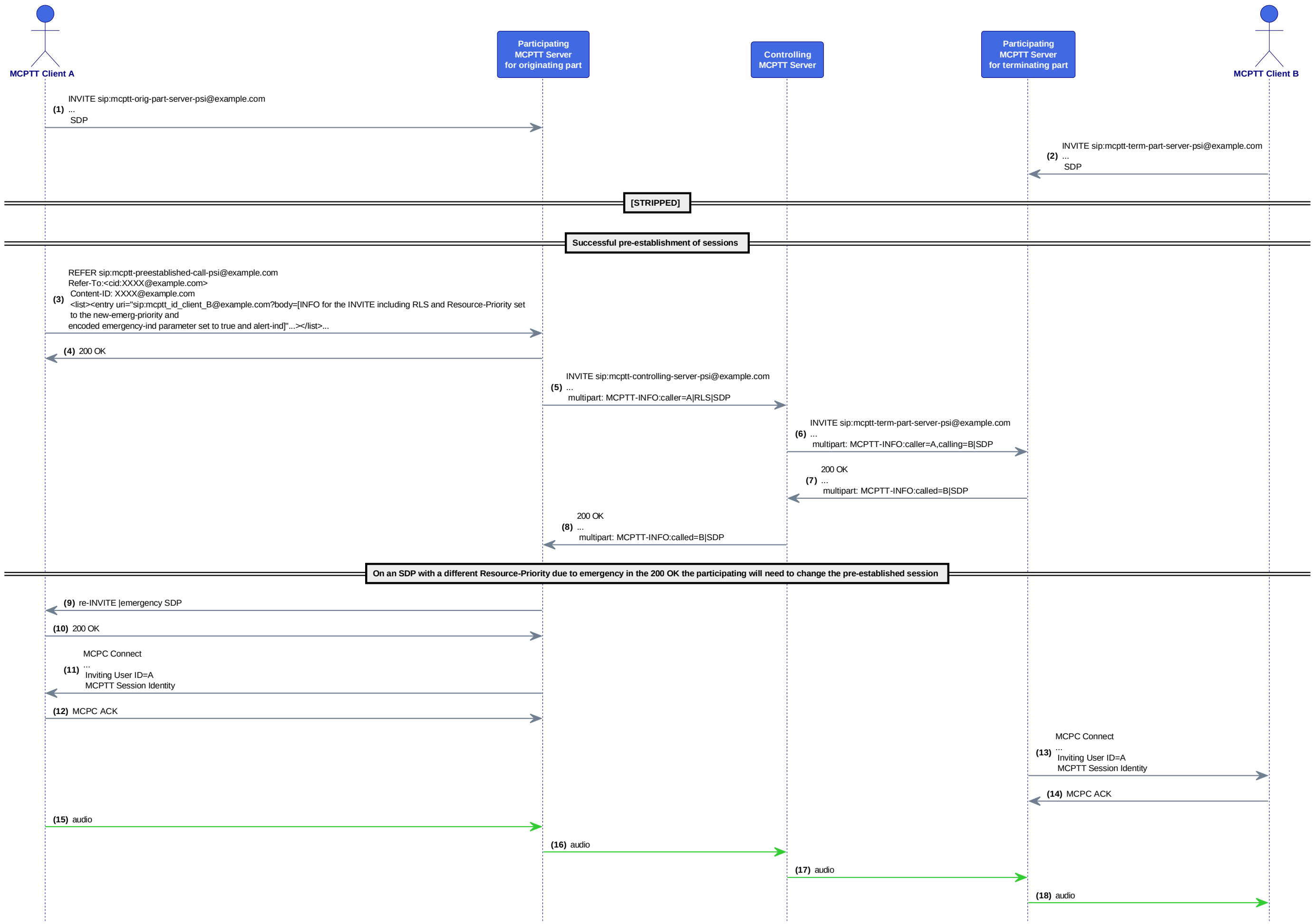

Figure 62bo: CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/03 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 71bq: CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/03 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/PRIV/AUTO/PRE/WFC/NFC/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for a private emergency MCPTT over prestablished sessions		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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 triggers a private emergency call for User 2 using pre-established session
	4	check	REFER with emergency indicator set to true 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 that answers with 200 OK upon user taking the emergency private call
	7	check	200 OK is forwared from the controlling to the originating participating
	8	check	The originating participating proceeds with MCPC procedure for the notification of the stablishment of the call over the pre-stablishbed session and, since the Resource-priority is different generates and sends a re-INVITE to update that pre-stablished session accordingly
	9	check	MCPTT client of User 1 sends a 200 OK for the updated pre-stablished session, participating updates the bearer information accordingly and MCPC connect is acknowledged
	10	verify	Emergency call stablished over an updated (new Resource-Priority) pre-stablished session

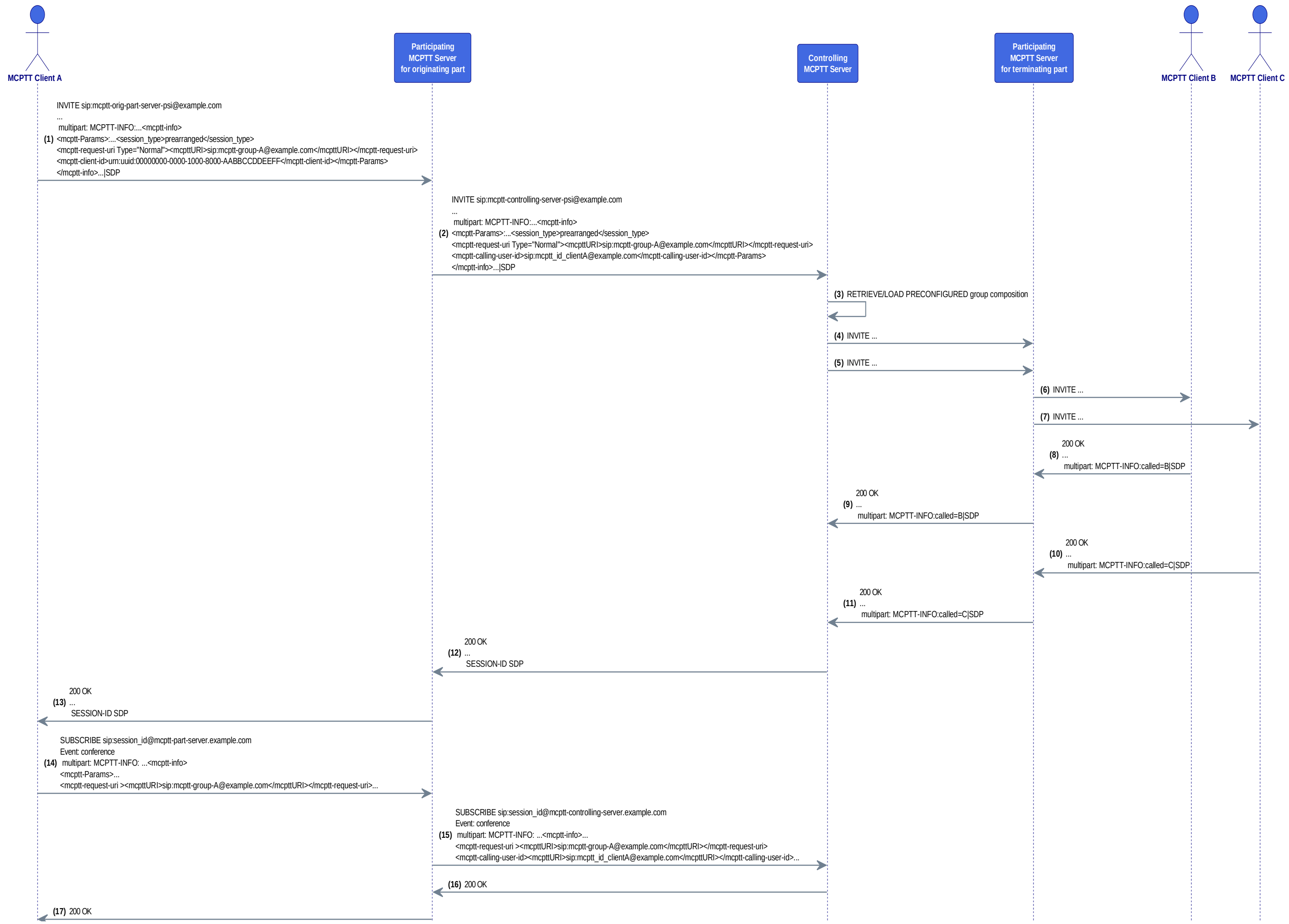
7.2.132 Subscription to Conference Event Package for pre-arranged group calls [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/SUBCONF/01]

This test case is equivalent to [CONN-MCPTT/ONN/GROUP/CHAT/ONDEM/SUBCONF/01] buf for prearranged group calls.

Therefore upon completing the whole prearranged group call setup (on receiving a SIP 2xx response to the original SIP INVITE request) the MCPTT client according to clause 10.1.1.2.1.1 in ETSI TS 124 379 [9] may subscribe to the conference event package as specified in clause 10.1.3.1.

That would mean in the sequence diagram since two users have been already included in the prearranged group call, the initial NOTIFY would include the information of that two users. If any of them leaves the ongoing prearranged group call the client A would get a new notification.

Message Sequence Diagram



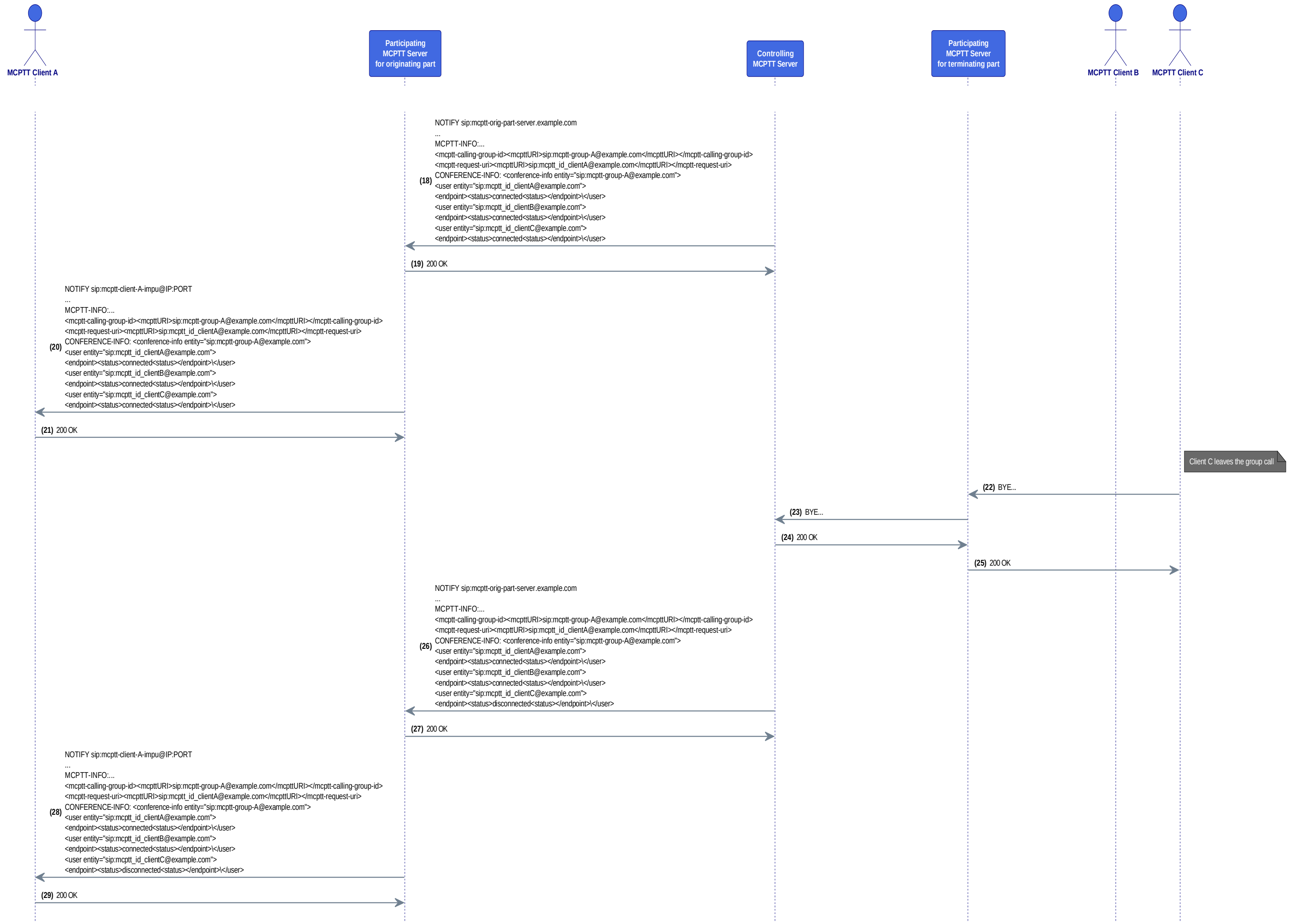


Figure 62bp: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/SUBCONF/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 71br: CONN-MCPTT/ONN/GROUP/PREA/ONDEM/SUBCONF/01 ITD

Interoperability Test Description			
Identifier	CONN-MCPTT/ONN/GROUP/PREA/ONDEM/SUBCONF/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for the subscription to the conference event during an on demand prearranged group Call		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity - among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates an on demand prearranged group call
	2	check	Initial group call properly setup
	3	check	Once the 200 OK has been received the MCPTT Client 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) leaves the on demand prearranged 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
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

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: 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

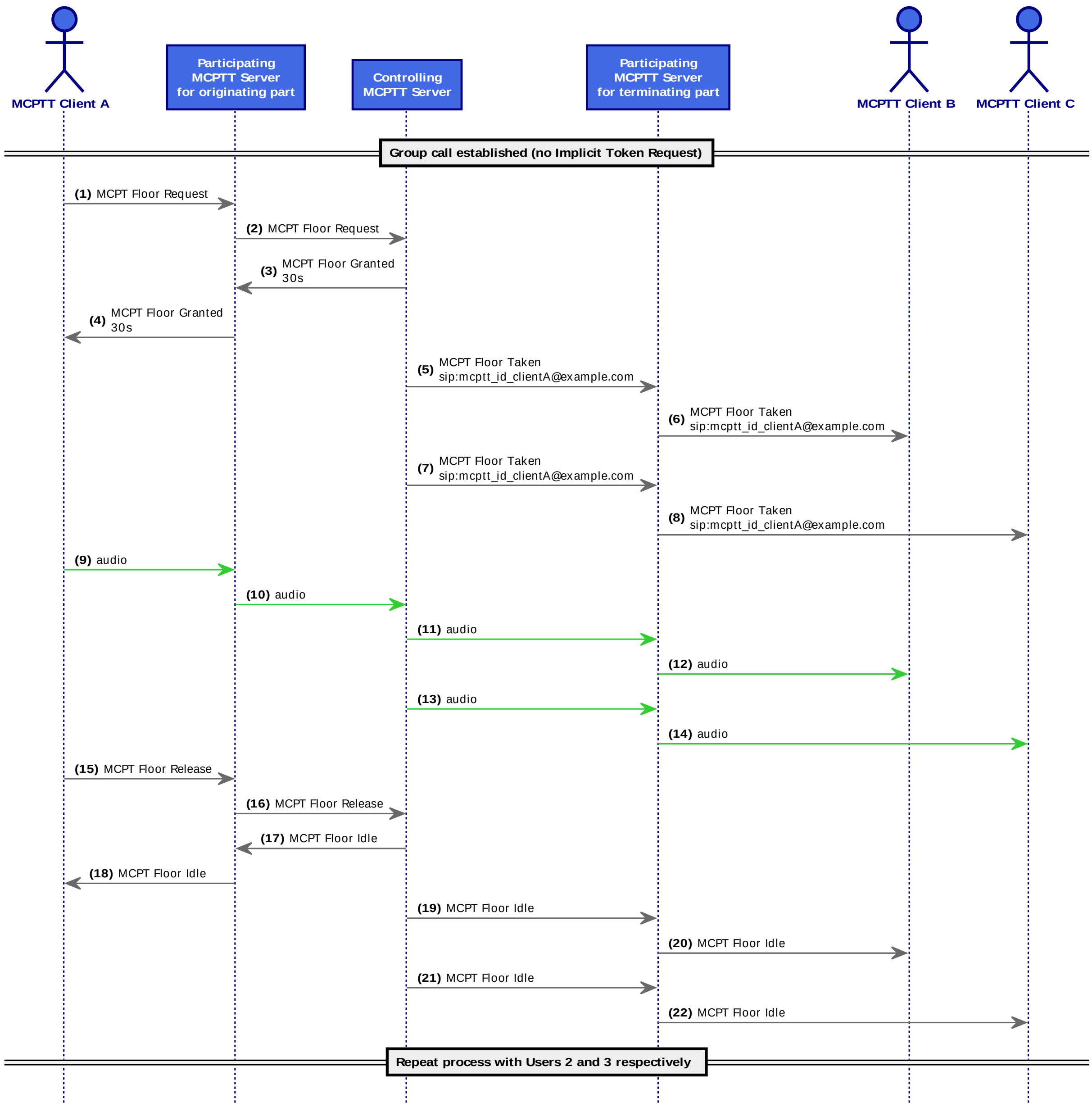


Figure 63: FC/BASIC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 72: FC/BASIC/01 ITD

Interoperability Test Description			
Identifier	FC/BASIC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT Floor Controlling capabilities in Clients and controlling		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • UEs properly registered to the SIP core/IMS and MCPTT system • On-demand pre-arranged Group Call properly established and in Floor-Idle state		
Test Sequence	**Step**	**Type**	**Description**
	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" fmtp 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

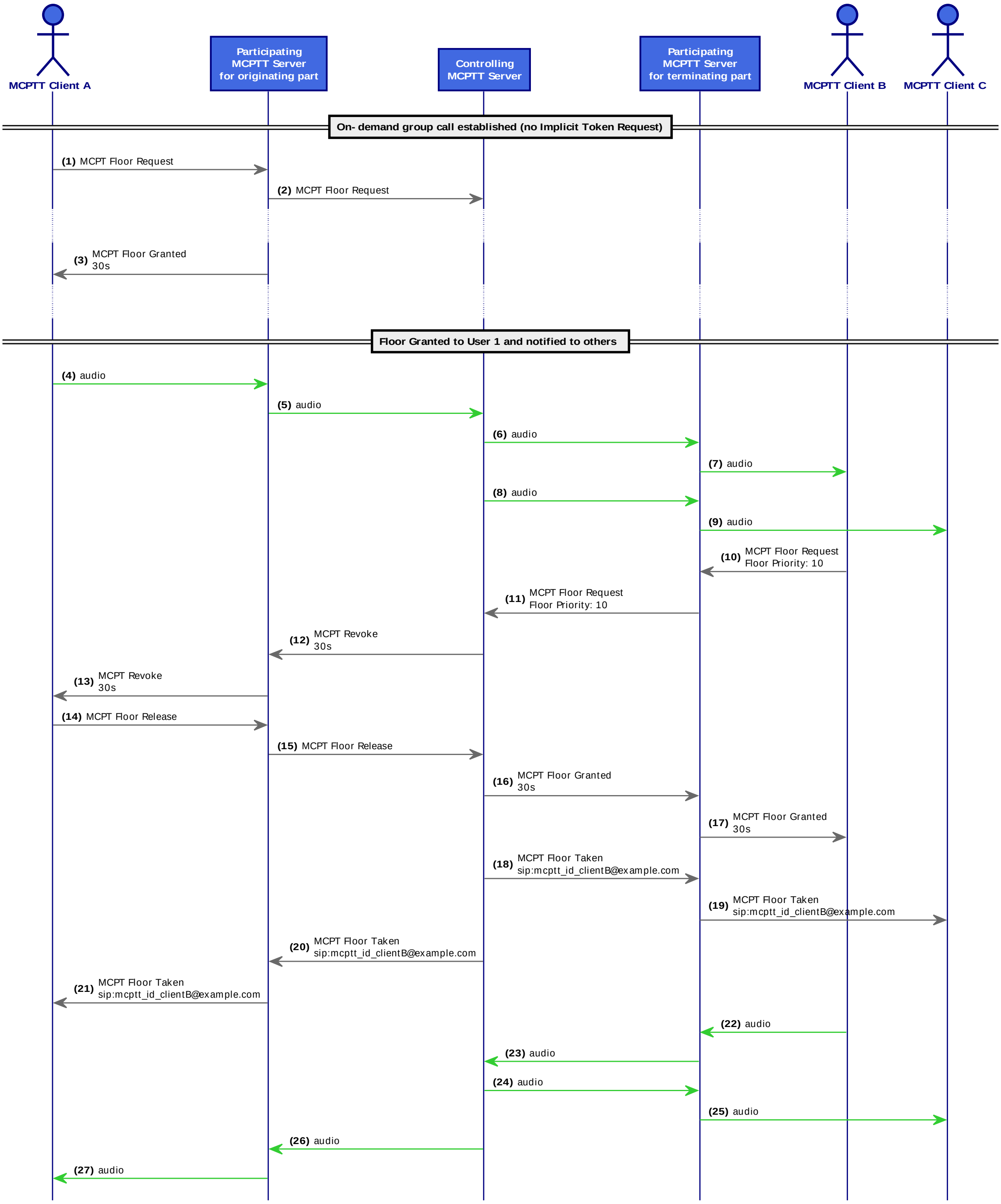

Figure 64: FC/BASIC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 73: FC/BASIC/02 ITD

Interoperability Test Description			
Identifier	FC/BASIC/02		
Test Objective	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.		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • UEs properly registered to the SIP core/IMS and MCPTT system • On-demand pre-arranged Group Call properly established and User 1 has been granted the token		
Test Sequence	**Step**	**Type**	**Description**
	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 in ETSI TS 124 380 [10]; 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

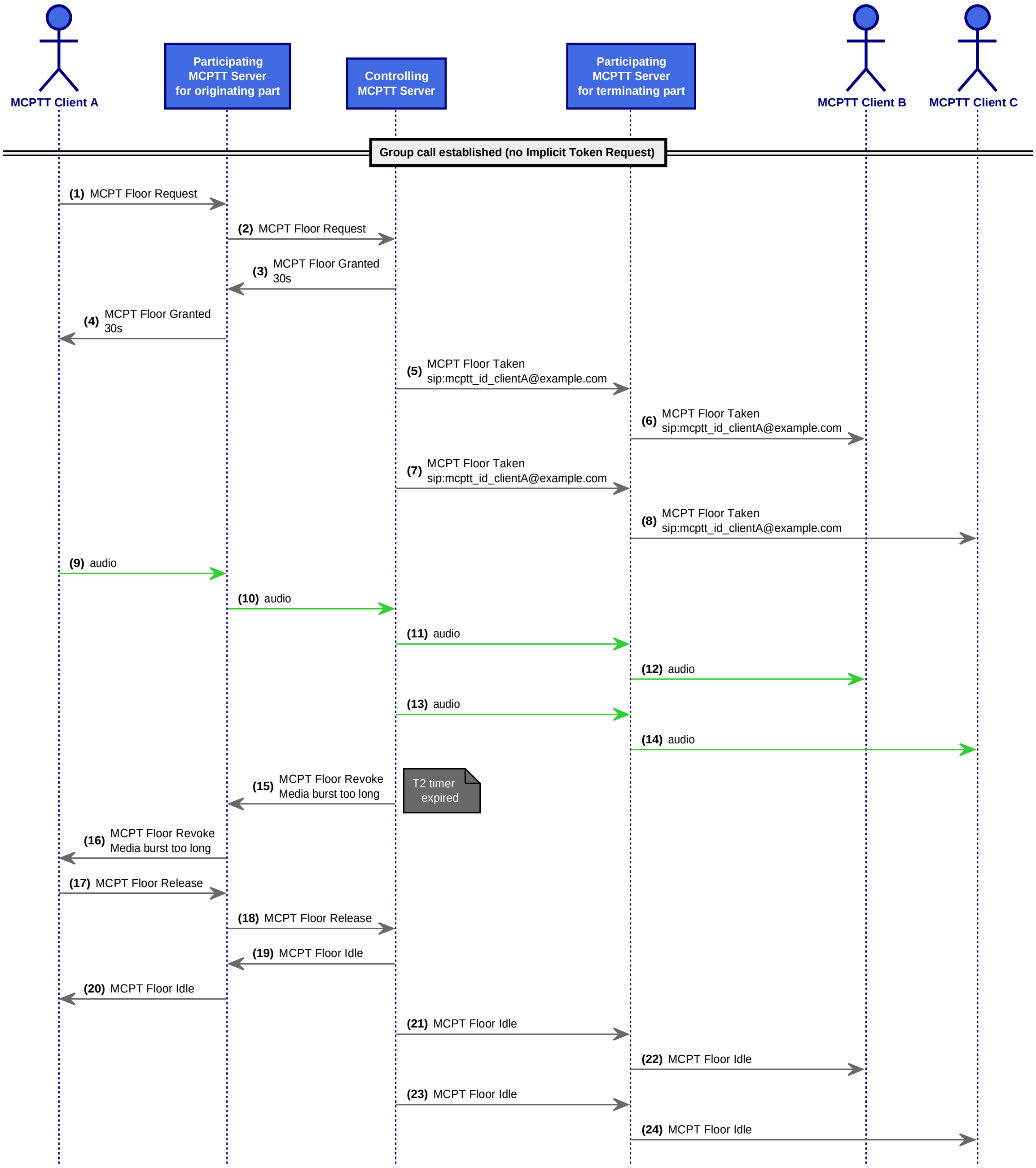

Figure 64a: FC/ADV/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 73a: FC/ADV/01 ITD

Interoperability Test Description			
Identifier	FC/ADV/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT Floor Controlling capabilities in Clients and controlling		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • UEs properly registered to the SIP core/IMS and MCPTT system • On-demand pre-arranged Group Call properly established and in Floor-Taken state (floor granted to User 1)		
Test Sequence	**Step**	**Type**	**Description**
	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

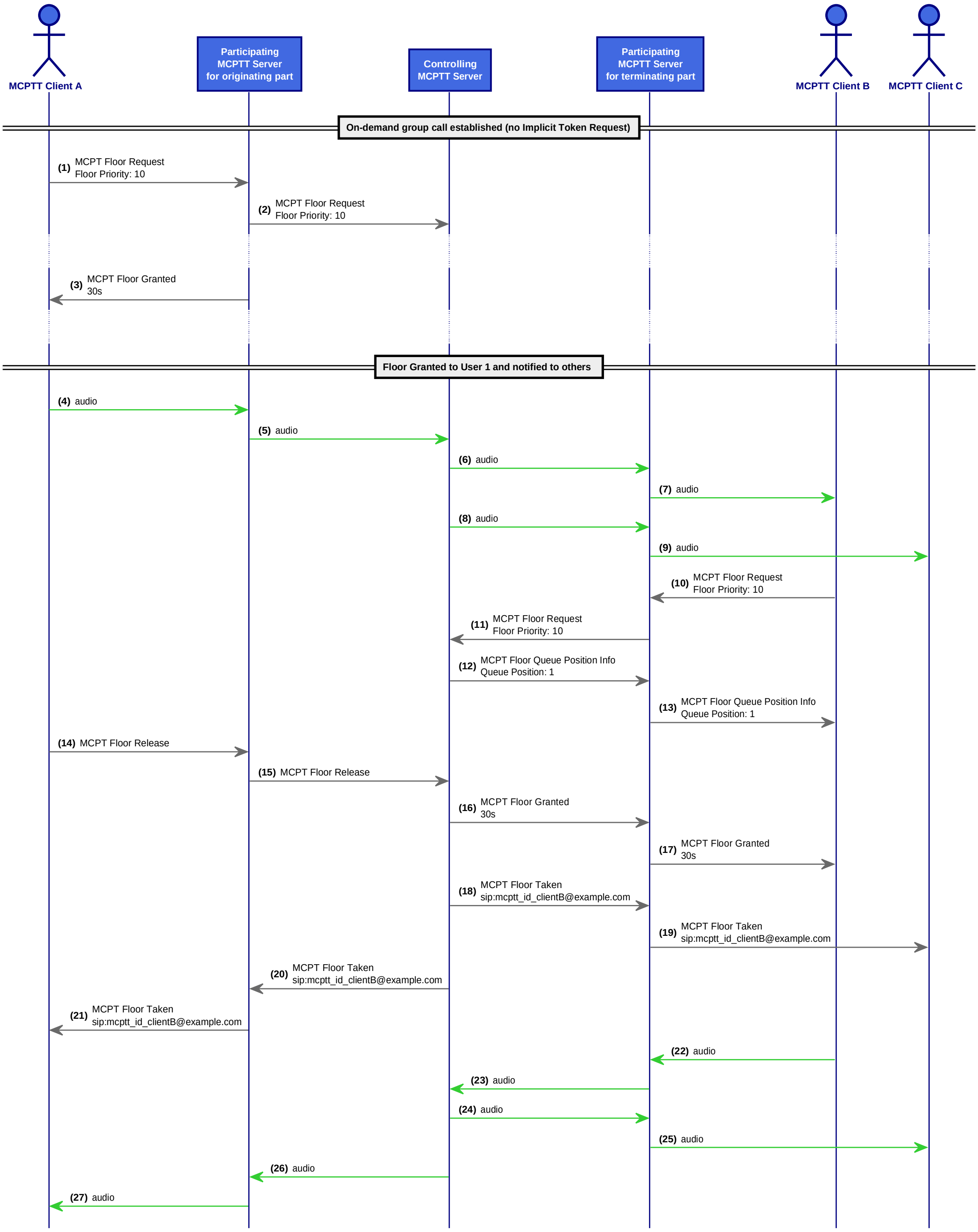

Figure 64b: FC/ADV/02 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 73b: FC/ADV/02 ITD

Interoperability Test Description			
Identifier	FC/ADV/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT Floor Controlling capabilities in Clients and controlling		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • UEs properly registered to the SIP core/IMS and MCPTT system • On-demand pre-arranged Group Call properly established and in Floor-Taken state (floor granted to User 1)		
Test Sequence	**Step**	**Type**	**Description**
	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

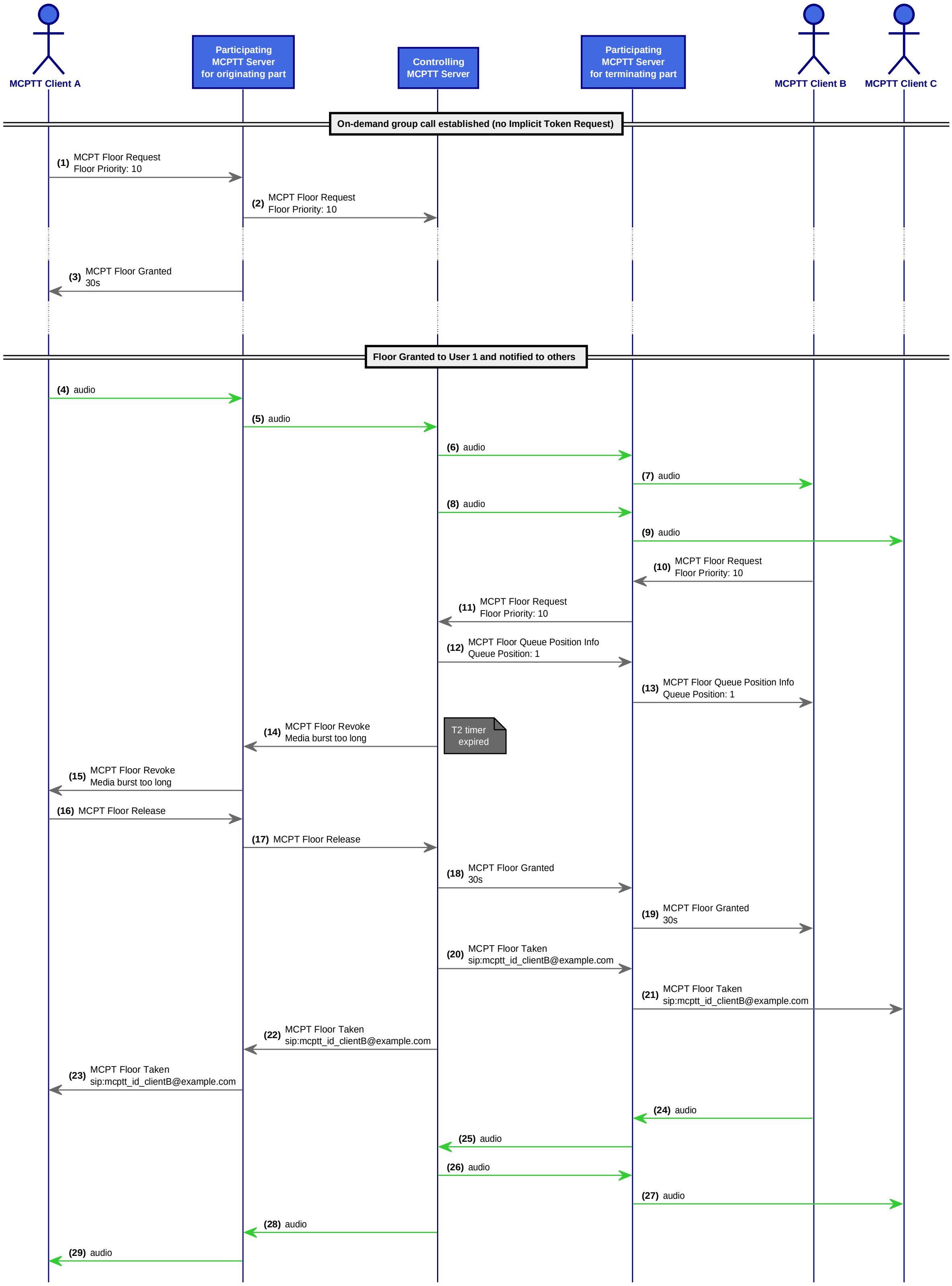

Figure 64c: FC/ADV/03 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 73c: FC/ADV/03 ITD

Interoperability Test Description			
Identifier	FC/ADV/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT Floor Controlling capabilities in Clients and controlling		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • UEs properly registered to the SIP core/IMS and MCPTT system • On-demand pre-arranged Group Call properly established and in Floor Taken state (floor granted to User 1)		
Test Sequence	**Step**	**Type**	**Description**
	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

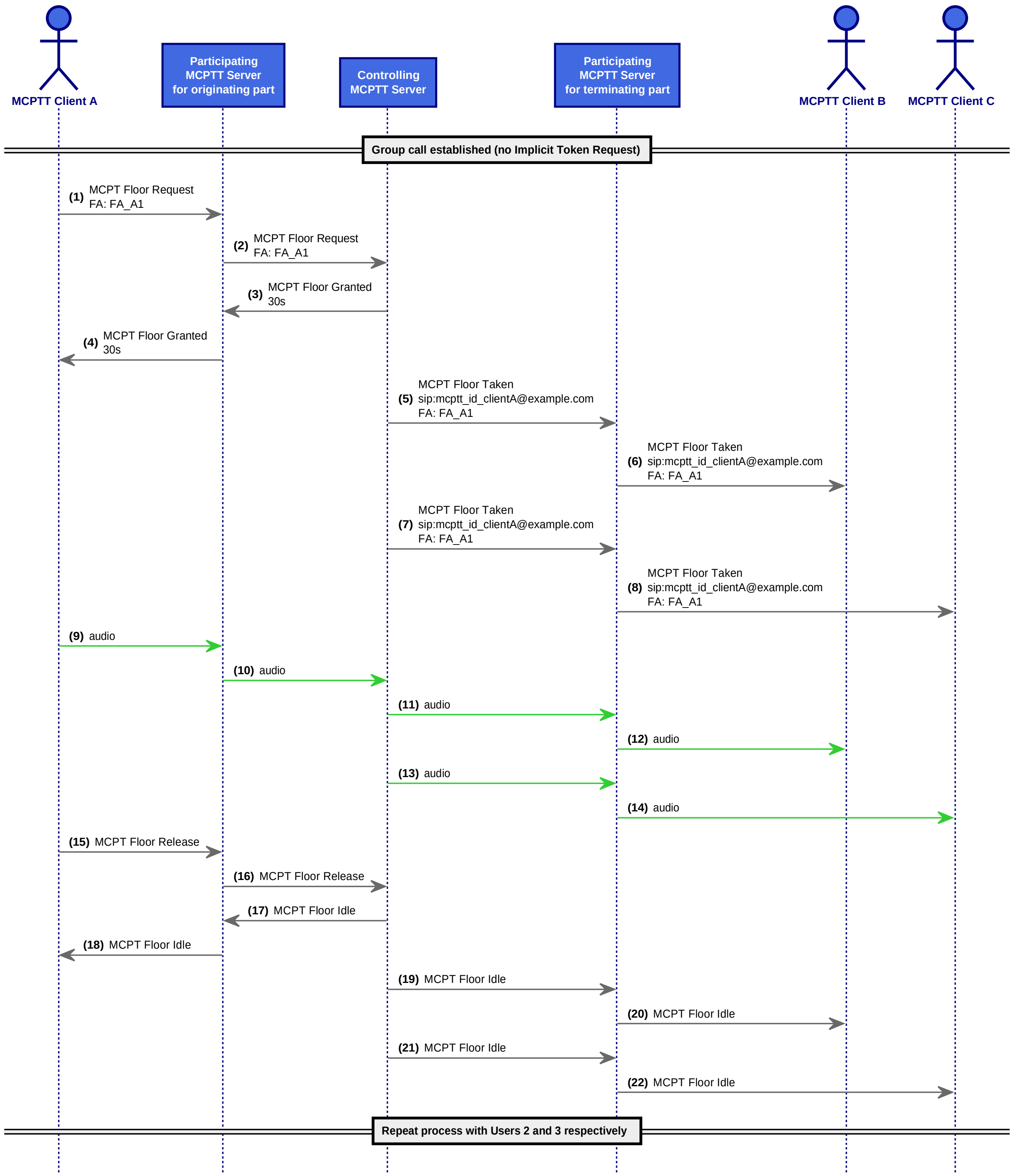

Figure 64d: FC/FA/BASIC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 73d: FC/FA/BASIC/01 ITD

Interoperability Test Description			
Identifier	FC/FA/BASIC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, MCPTT Floor Controlling capabilities with embedded FA signalling in Clients and controlling		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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 in ETSI TS 124 380 [10], 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

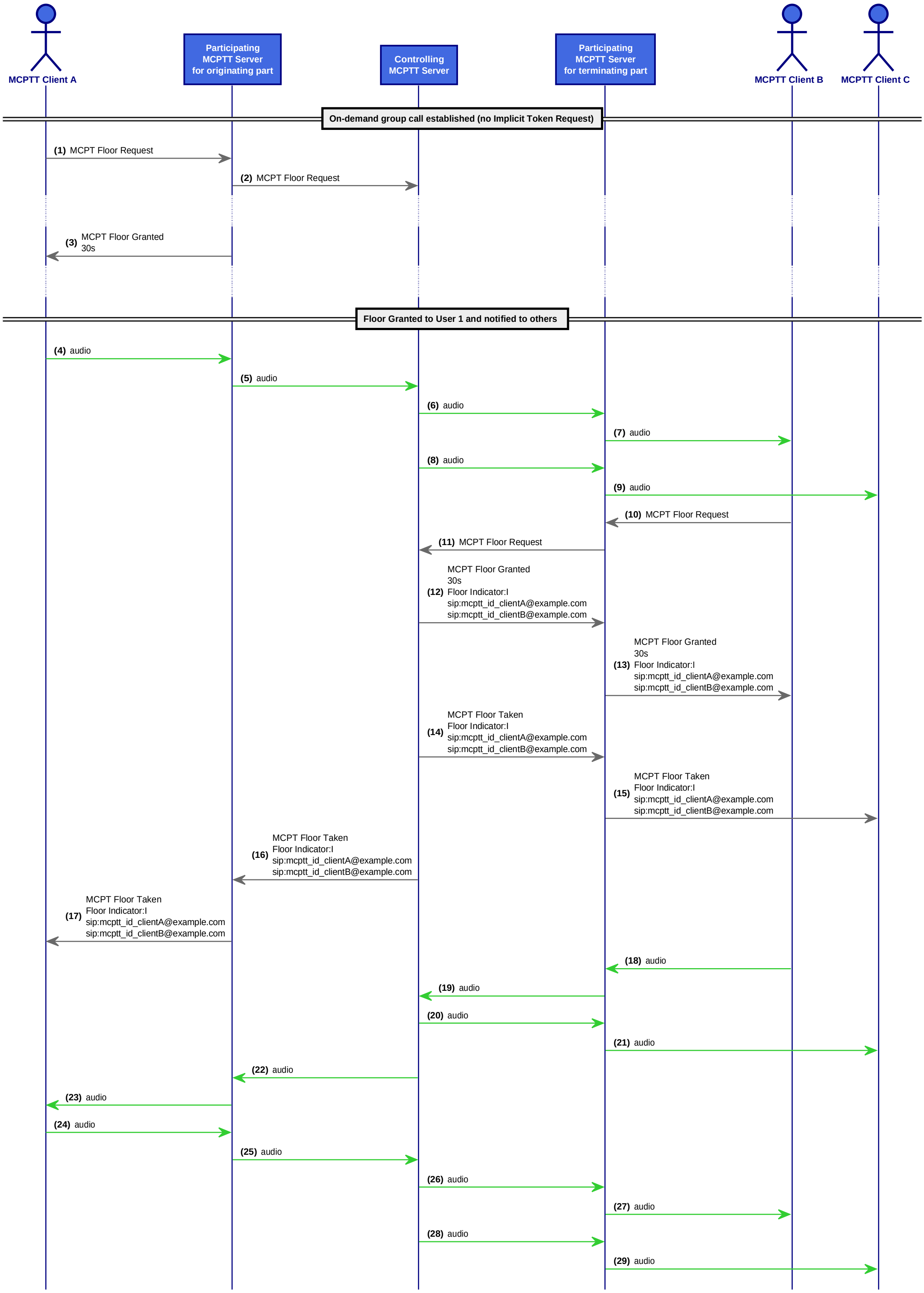

Figure 64e: FC/MT/BASIC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 73e: FC/MT/BASIC/01 ITD

Interoperability Test Description			
Identifier	FC/MT/BASIC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, MCPTT Floor Controlling capabilities in a multi-talker scenario		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Floor granted to User 1		
Test Sequence	**Step**	**Type**	**Description**
	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

7.3.8 Sharing location information during FC operations [FC/LOC/BASIC/01]

This TC shows the location sharing feature in Floor Control operations. As defined by ETSI TS 124 380 [10] (i.e. clause for the Floor Request message) a floor control operation shall include the location of the user if the current location of the talker is available and may be reported according to the MCPTT user profile. As specified in clause 6.2.4.3.5, that will require including in the MCPT RTCP App message either a Location field including Geographic coordinates Location Type or a List of Locations including the former and an Altitude Location Type (if the altitude is available). Location Type encoding is described in table 8.2.3.21-3 in ETSI TS 124 380 [10].

If no location is available a Location field with the location type is set to '0' (Not provided) would be included.

In this test case the first option (Location field with Geographic coordinates Location) will be evaluated (note in the figure that Floor Request and Floor Taken messages only include the Location field –also Floor Ack not depicted in figure 64f).

Message Sequence Diagram

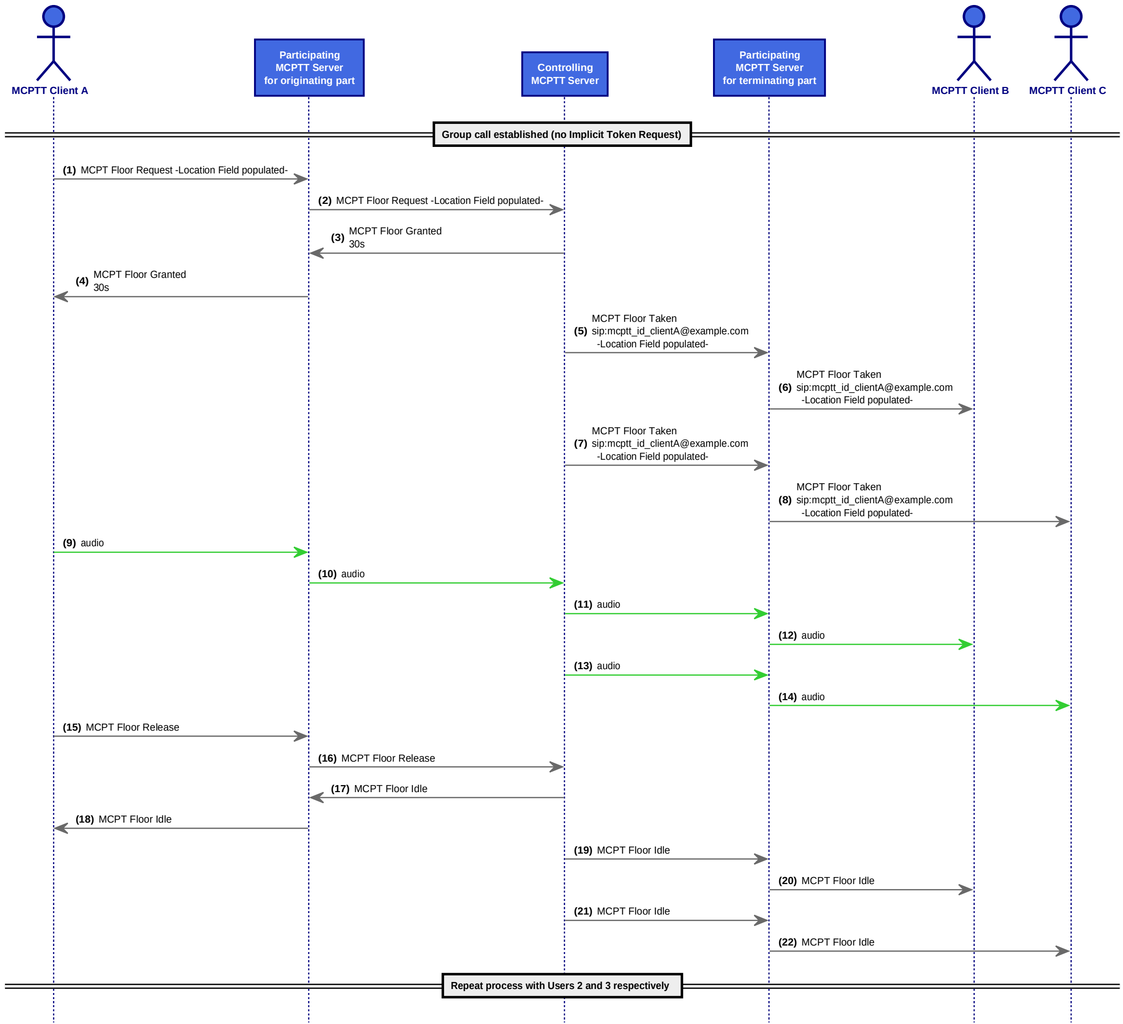

Figure 64f: FC/LOC/BASIC/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 73f: FC/LOC/BASIC/01 ITD

Interoperability Test Description			
Identifier	FC/LOC/BASIC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, sharing location in MCPTT Floor Controlling capabilities		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • UEs properly registered to the SIP core/IMS and MCPTT system • On-demand pre-arranged Group Call properly established and in Floor-Idle state		
Test Sequence	**Step**	**Type**	**Description**
	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 with location included
	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 and location conveyed to the other participants

7.3.9 Sharing location information during multi-talker FC operations [FC/MT/LOC/BASIC/01]

This TC shows the location sharing feature in Floor Control operations in multitalker scenarios. Therefore, as a combination of [FC/MT/BASIC/01] and [FC/LOC/BASIC/01] and as defined by ETSI TS 124 380 [10] specific floor control operations shall include the location of the user (if the location of the talker is available and the MCPTT user profile enables it). In multitasker scenarios that will require including, apart from the multitalker code and associated fields, a List of Locations field and either Location field including Geographic coordinates Location Type per user talking or a couple of Locations per user including the Geographic coordinates Type and an Altitude Location Type (if the altitude is available).

As in [FC/LOC/BASIC/01], in this test case the first option (Location field with Geographic coordinates Location) will be evaluated. Following clause 6.3.4.4.2, clause 3 b) if multi-talker is supported and the floor is currently granted to multiple participants it shall include the List of Locations of granted floor participants.

Message Sequence Diagram

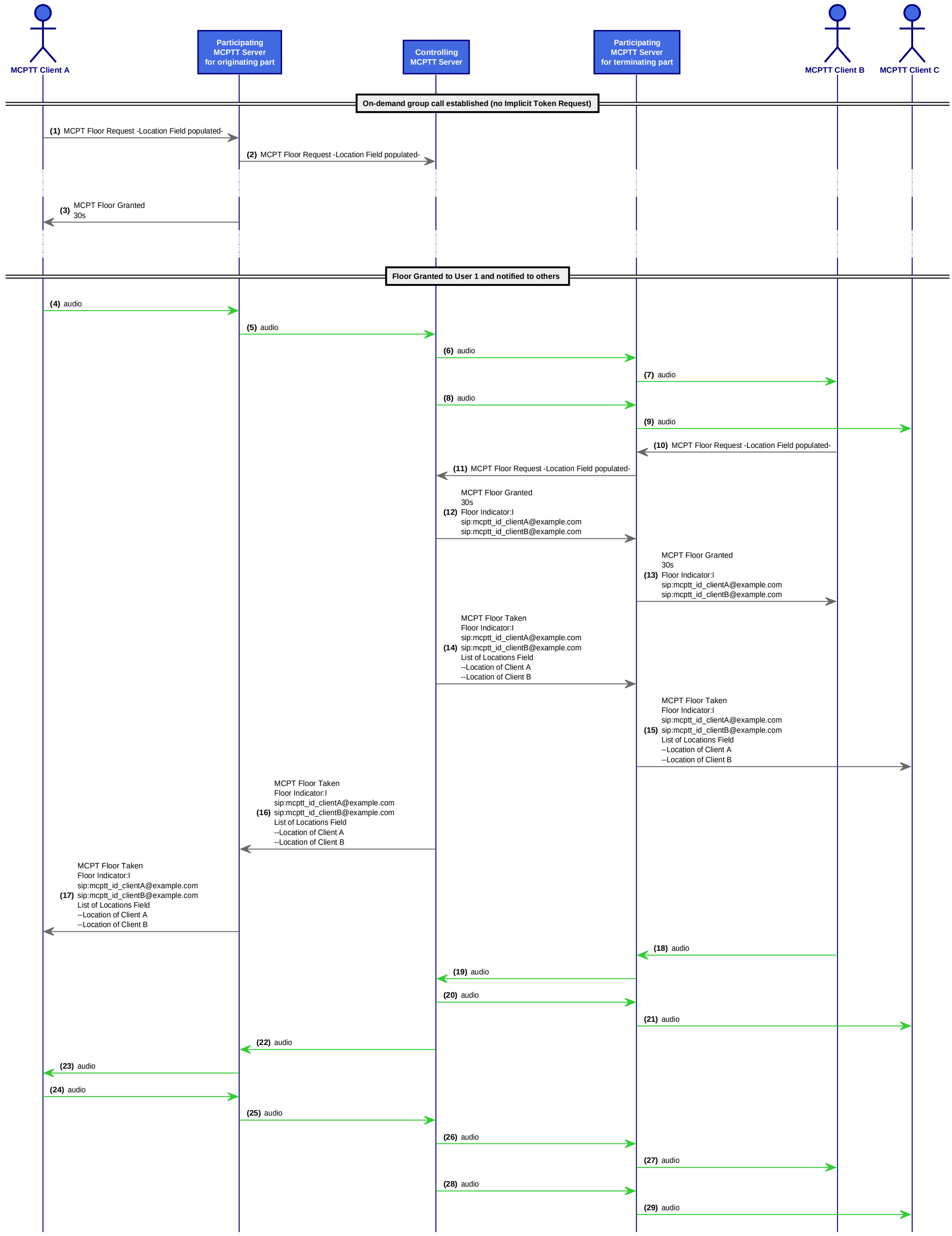

Figure 64g: FC/MT/LOC/BASIC/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 73g: FC/MT/LOC/BASIC/01 ITD

Interoperability Test Description			
Identifier	FC/MT/LOC/BASIC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, MCPTT Floor Controlling capabilities in a multi-talker scenario showing location sharing capabilities		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Floor granted to User 1		
Test Sequence	**Step**	**Type**	**Description**
	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 including Client B's location
	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 and a List of Locations including both's locations)
	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: MCData and MCVideo define a sibling Registration and Service Authorization mechanism, for the 2nd Plugtests MCPTT will be used to test Registration and Service Authorization.

Message Sequence Diagram

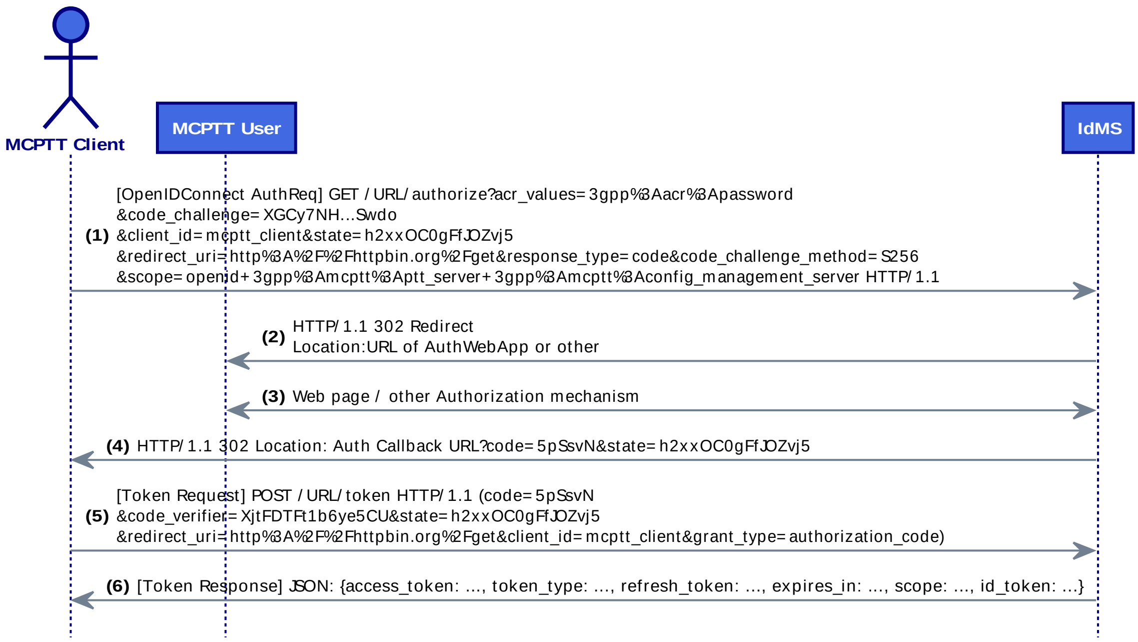

Figure 65: REGAUTH/IDMSAUTH/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 74: REGAUTH/IDMSAUTH/01 ITD

Interoperability Test Description			
Identifier	REGAUTH/IDMSAUTH/01		
Test Objective	Verify IP connectivity, proper access from the MCPTT Client to the IdMS and successful authentication mechanism		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• OpenID Connect Core 1.0 (see ETSI TS 124 482 [12])		
Applicability	• MCPTT-Client_IDMS		
Pre-test conditions	• IP connectivity among all elements of the specific scenario, access to the IdMS via the proper APN and tunnelling mechanism if any		
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 3rd 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 2nd Plugtests MCPTT will be used to test Registration and Service Authorization.

Message Sequence Diagram

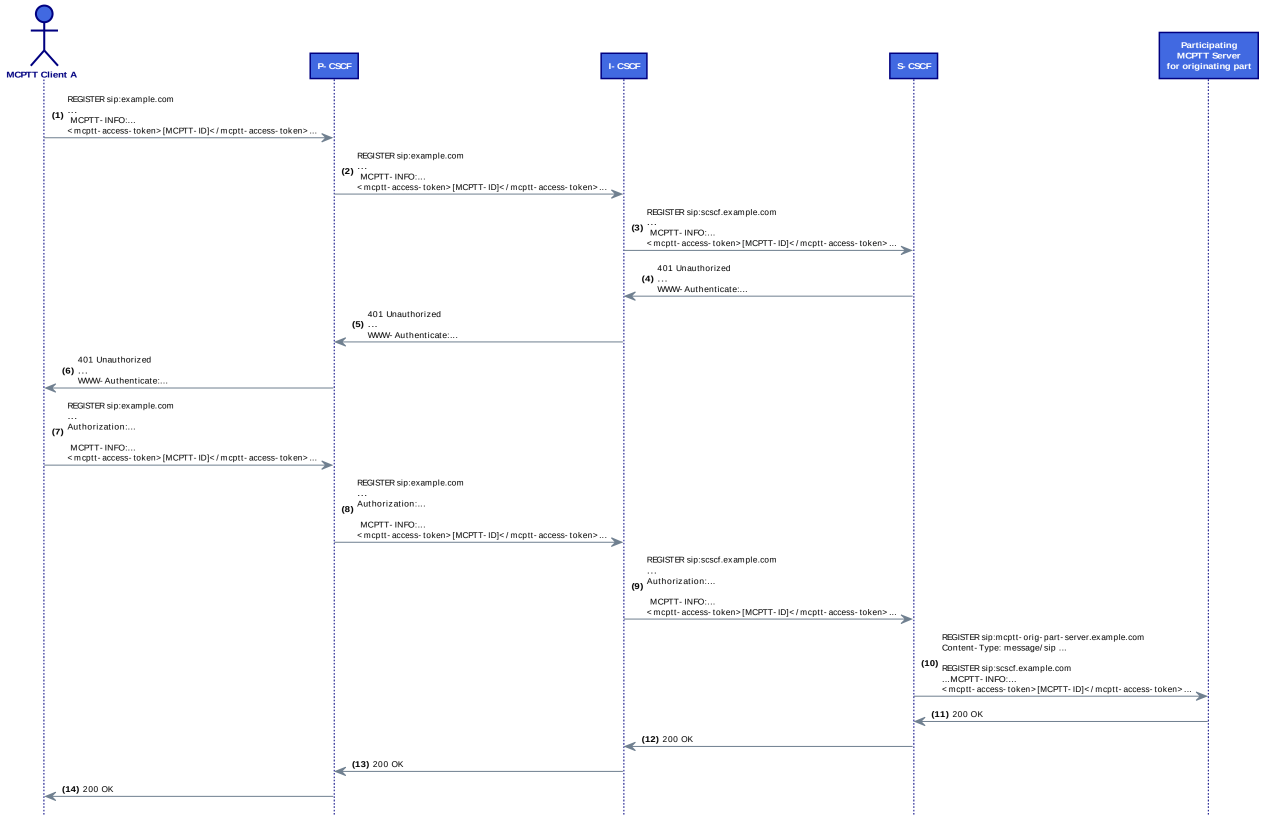

Figure 66: REGAUTH/3PRTYREG/REGISTER/01 Message Sequence

Message Details

[1] UE --> 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>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>
```

[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
...
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>
```

Interoperability Test Description

Table 75: REGAUTH/3PRTYREG/REGISTER/01 ITD

Interoperability Test Description			
Identifier	REGAUTH/3PRTYREG/REGISTER/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and 3rd party registration to the MCPTT Participating		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_REGAUTH • IMS_3RDPARTYREGISTER		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers • Client previously authenticated in the IdMS or the Identity and Access Token have been received by other mean		
Test Sequence	**Step**	**Type**	**Description**
	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 3rd 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 2nd Plugtests MCPTT will be used to test Registration and Service Authorization.

Message Sequence Diagram

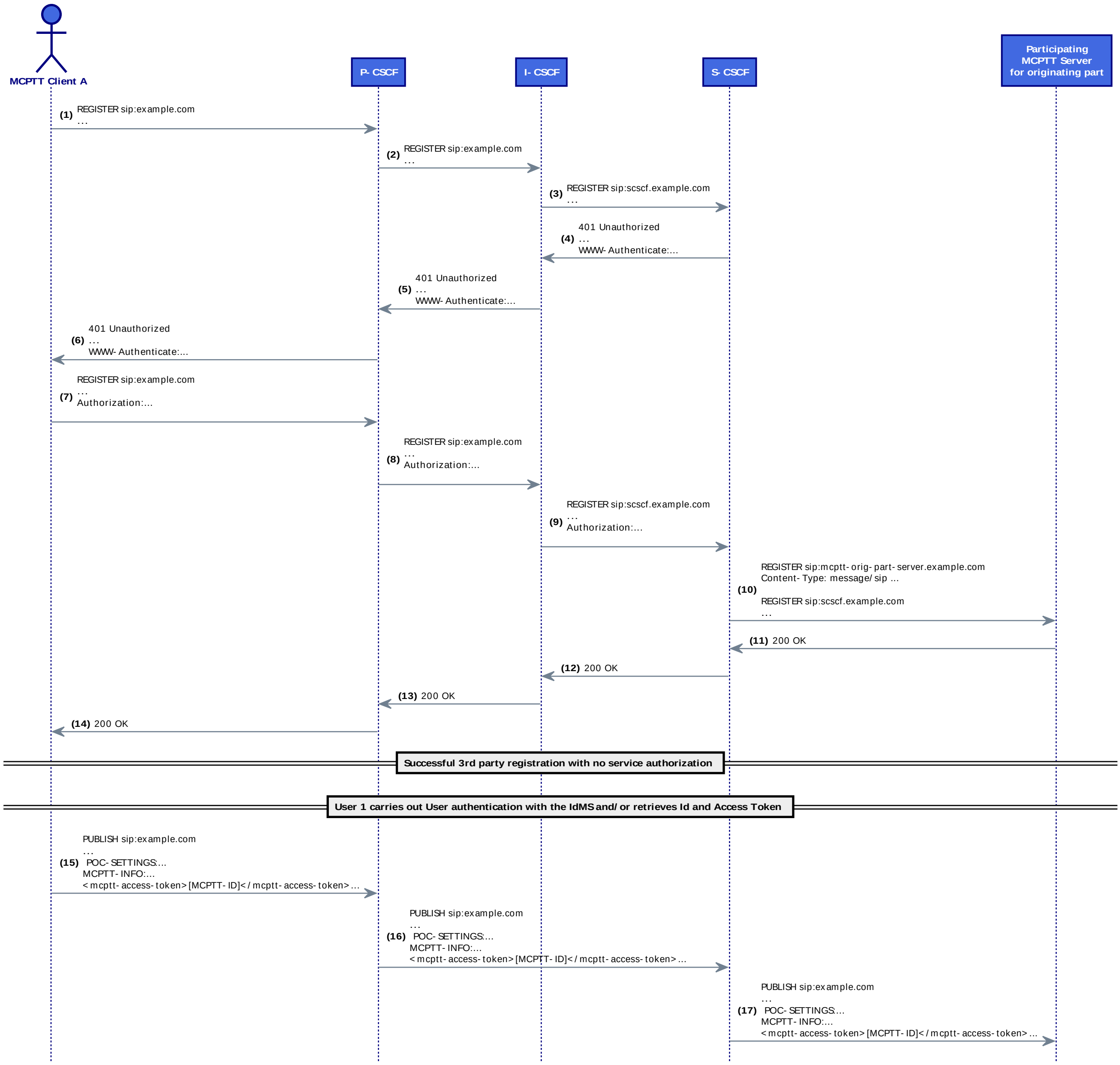

Figure 67: REGAUTH/PUBLISH/REGISTER/01 Message Sequence

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			
Identifier	REGAUTH/PUBLISH/REGISTER/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, 3rd party registration to the MCPTT Participating and SIP PUBLISH based service authorization mechanism		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_PUBAUTH • IMS_3RDPARTYREGISTER		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers • Proper configuration of PCC related Functional elements (P-CSCF and PCRF)		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) registers with its IMPU
	2	check	REGISTER sent to the P-CSCF without mcptt-info body
	3	check	REGISTER sent to the S-CSCF
	4	check	S-CSCF creates a 3rd 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

7.4.4 MCPTT service server limits the number of simultaneous successful service authorizations while using third-party registration [REGAUTH/3PRTYREG/REGISTER/02]

Similarly to REGAUTH/3PRTYREG/REGISTER/01 in this test case 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]).

However, in this case, as defined in clause 7.3.2 in ETSI TS 124 379 [9], upon receiving a third party SIP REGISTER request with a message/sip MIME body containing the SIP REGISTER the participating server according to step 2a) "shall check if the number of maximum simultaneous authorizations supported for the MCPTT user as specified in the <max-simultaneous-authorizations> element of the <anyExt> element contained in the <OnNetwork> element of the MCPTT service configuration document (ETSI TS 124 484 [14]) has been reached". If reached "the MCPTT server shall not continue with the rest of the steps…".

NOTE: No answer is defined while in clause 7.3.3 step 3a) a Busy here is generated. This behaviour has been considered.

Message Sequence Diagram

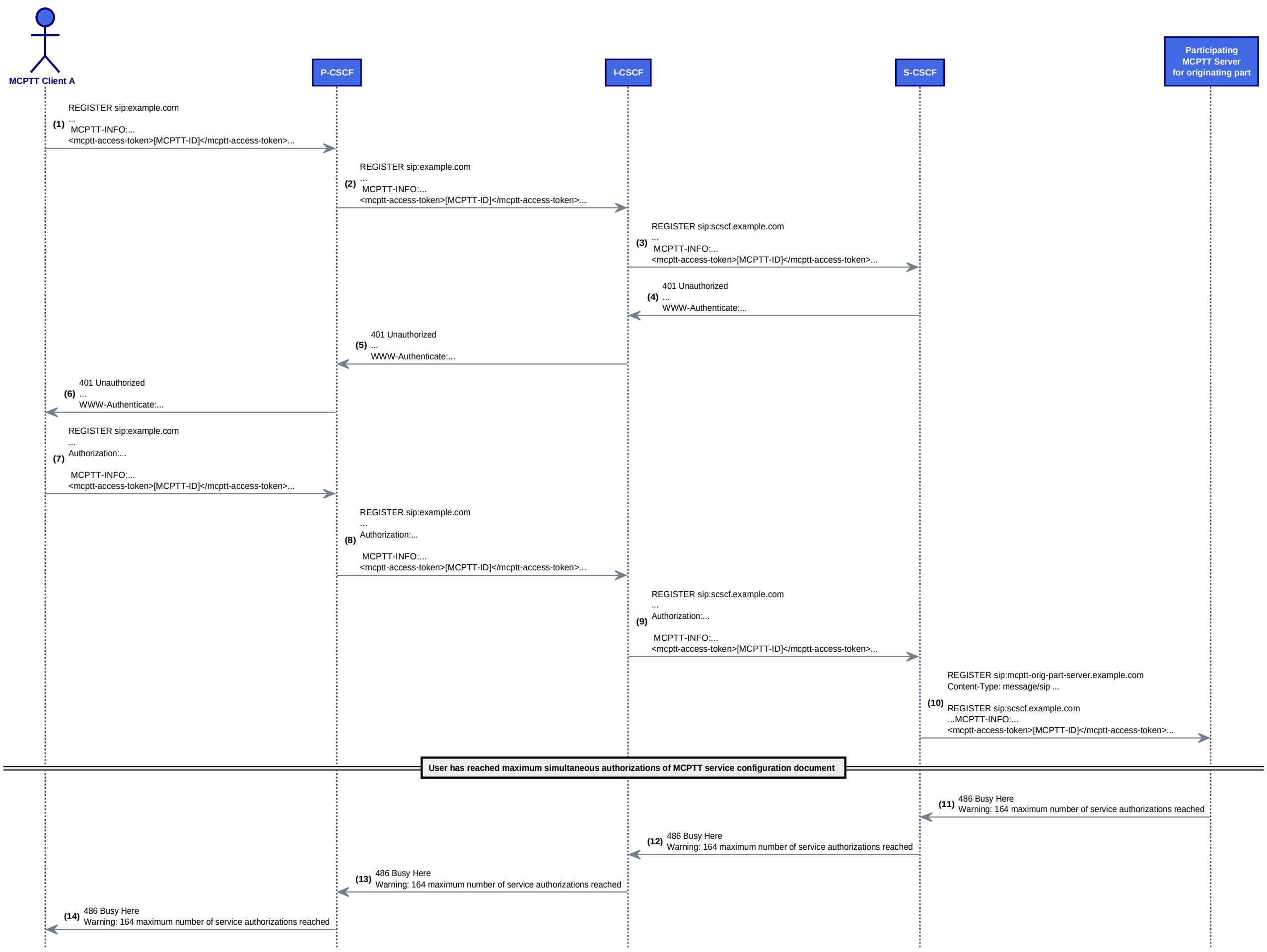

Figure 67a: REGAUTH/3PRTYREG/REGISTER/02 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 76a: REGAUTH/3PRTYREG/REGISTER/02 ITD

Interoperability Test Description	
Identifier	REGAUTH/3PRTYREG/REGISTER/02
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and 3rd party registration to the MCPTT Participating when the maximum number of simultaneous authorizations has been reached
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-CALL • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_REGAUTH • IMS_3RDPARTYREGISTER

Interoperability Test Description			
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers • Participating has downloaded the service profile document • Client previously authenticated in the IdMS or the Identity and Access Token have been received by other mean		
Test Sequence	**Step**	**Type**	**Description**
	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 3rd Party Register towards the participating and embeds the original REGISTER as body
	5	check	Participating checks the service profile document and, since the maximum number of simultaneous service authorizations has been reached, sends a 486 Busy here back with the proper Warning header
	6	verify	User 1 is not authorized

7.4.5 MCPTT service server limits the number of simultaneous successful service authorizations while using PUBLISH mechanism [REGAUTH/PUBLISH/REGISTER/02]

Following 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.

In this case, as defined in clause 7.3.3 in ETSI TS 124 379 [9], upon receiving a SIP PUBLISH the participating serving the user shall, according to step 3a), "check if the number of maximum simultaneous authorizations supported for the MCPTT user as specified in the <max-simultaneous-authorizations> element of the <anyExt> element contained in the <OnNetwork> element of the MCPTT service configuration document (see the service configuration document in ETSI TS 124 484 [14]) has been reached".

If reached, the participating server "shall send a SIP 486 (Busy Here) response towards the MCPTT client with the warning text set to: "164 maximum number of service authorizations reached" in a Warning header field as specified in clause 4.4 in ETSI TS 124 379 [9], and shall not continue with the rest of the steps".

Message Sequence Diagram

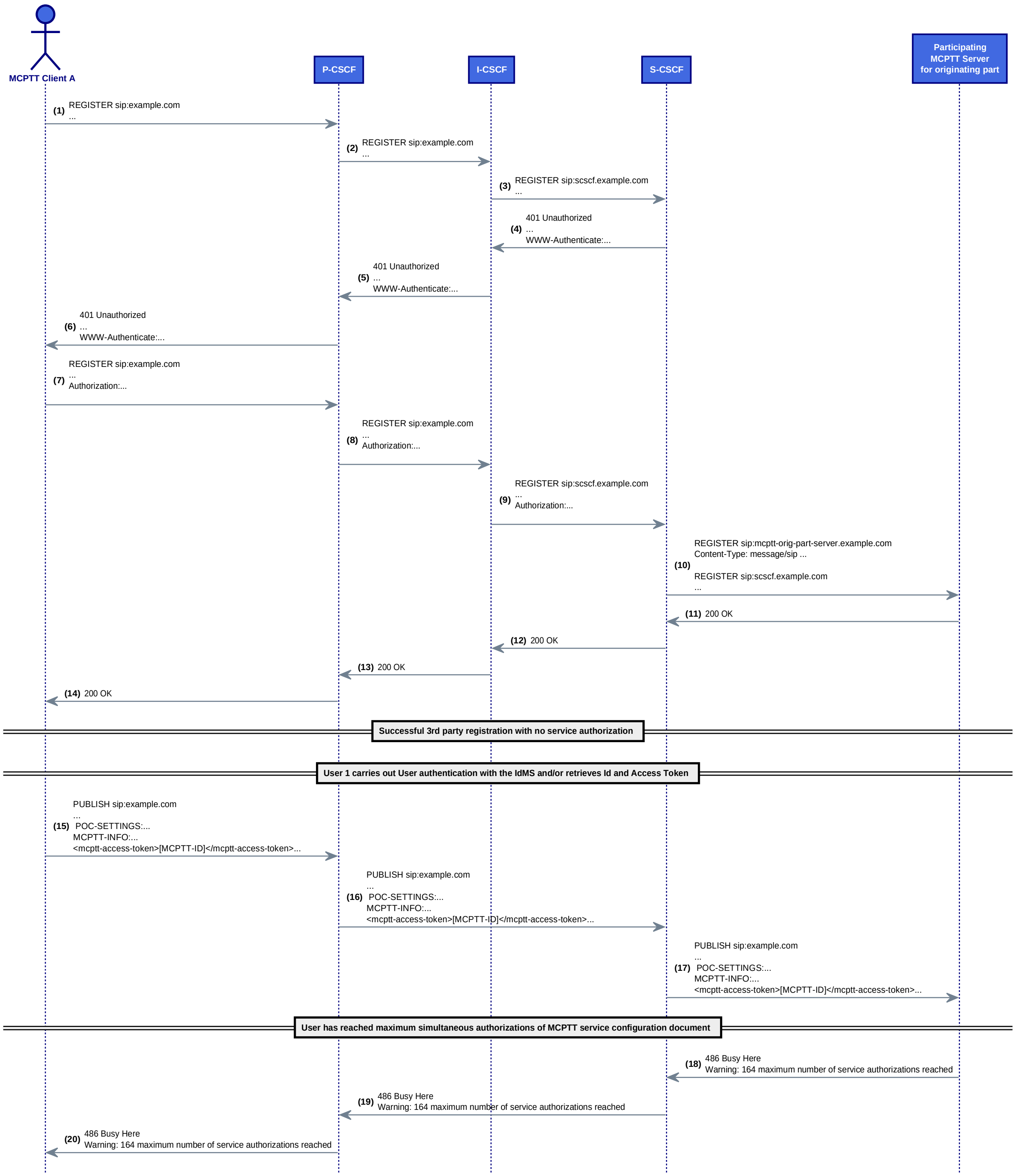

Figure 67b: REGAUTH/PUBLISH/REGISTER/02 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 76b: REGAUTH/PUBLISH/REGISTER/02 ITD

Interoperability Test Description			
Identifier	REGAUTH/PUBLISH/REGISTER/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, 3rd party registration to the MCPTT Participating and SIP PUBLISH based service authorization mechanism		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_PUBAUTH • IMS_3RDPARTYREGISTER		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers • Proper configuration of PCC related Functional elements (P-CSCF and PCRF)		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) registers with its IMPU
	2	check	REGISTER sent to the P-CSCF without mcptt-info body
	3	check	REGISTER sent to the S-CSCF
	4	check	S-CSCF creates a 3rd 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	check	Participating checks the service profile document and, since the maximum number of simultaneous service authorizations has been reached, sends a 486 Busy here back with the proper Warning header
	7	verify	User 1 is not authorized

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 2nd 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

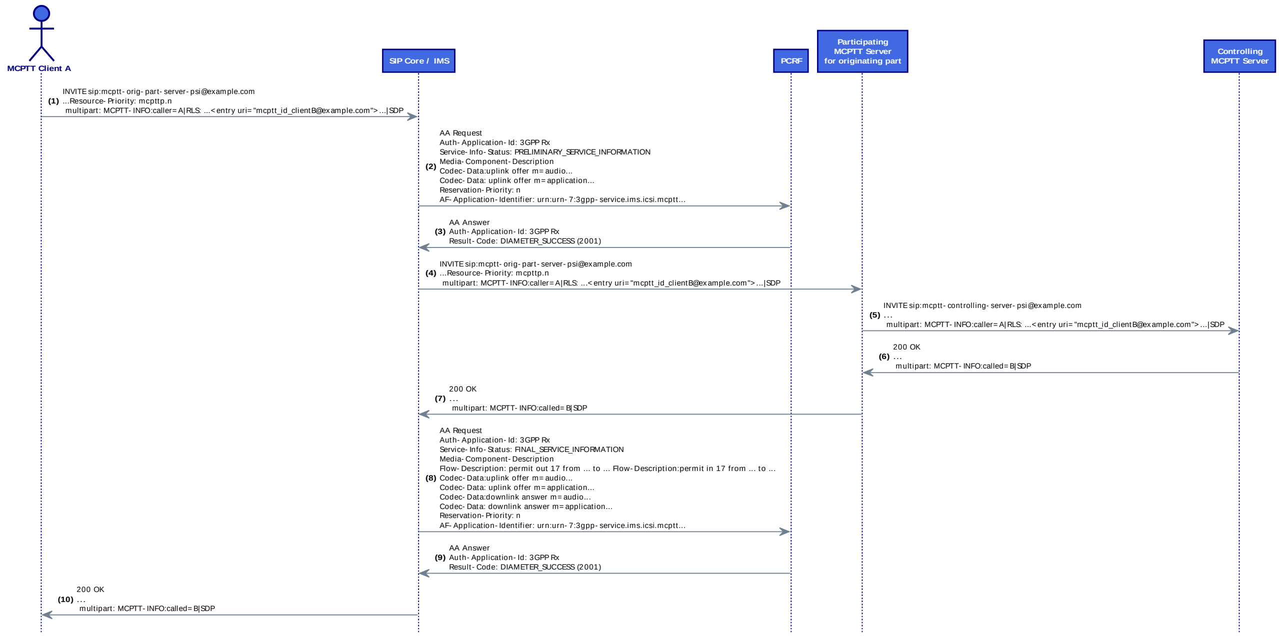

Figure 68: PCC/BEARERSETUP/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 77: PCC/BEARERSETUP/01 ITD

Interoperability Test Description			
Identifier	PCC/BEARERSETUP/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and IMS PCC mechanisms supporting MCPTT applications		
Configuration(s)	• CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6) • IMS_RX (clause 6.4)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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

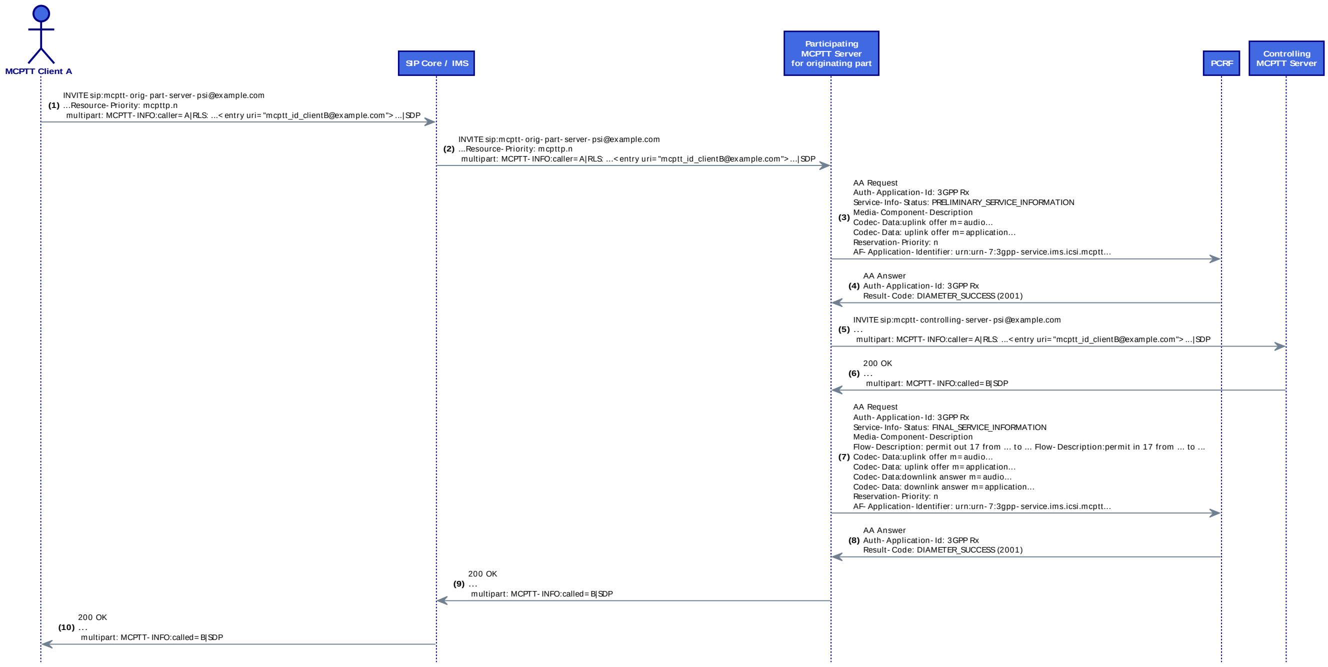

Figure 69: PCC/BEARERSETUP/02 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 78: PCC/BEARERSETUP/02 ITD

Interoperability Test Description			
Identifier	PCC/BEARERSETUP/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT participating signalling MCPTT PCC applications		
Configuration(s)	• CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_RX, MCPTT-Part_MCPTT-FC (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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

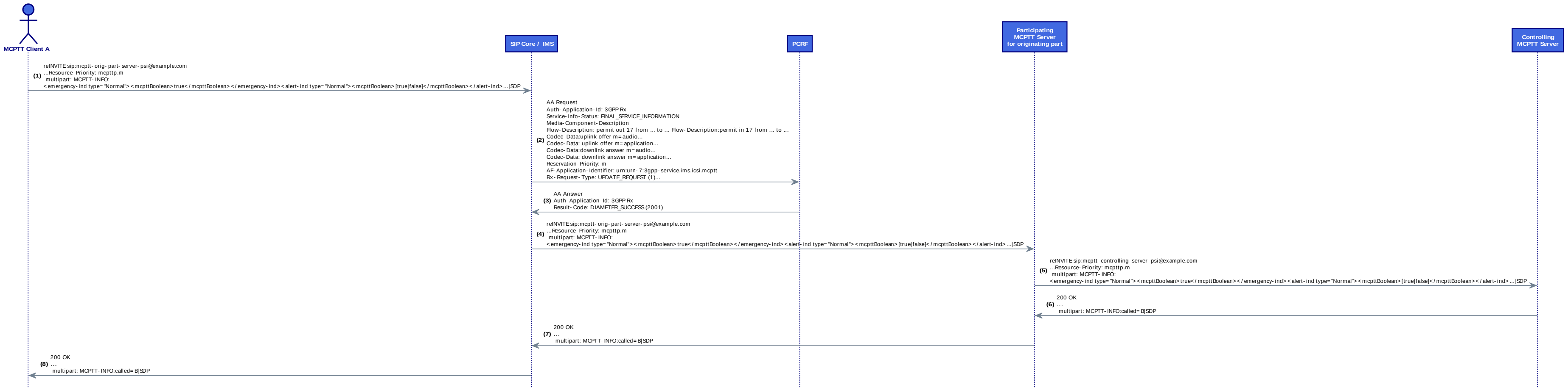

Figure 70: PCC/BEARERUPDATE/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 79: PCC/BEARERUPDATE/01 ITD

Interoperability Test Description			
Identifier	PCC/BEAREREUPDATE/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and IMS PCC mechanisms supporting MCPTT applications		
Configuration(s)	• CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6) • IMS_RX (clause 6.4)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Ongoing private call between User 1 and User 2 with certain bearer conditions		
Test Sequence	**Step**	**Type**	**Description**
	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			
Identifier	PCC/BEARERUPDATE/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT participating signalling MCPTT PCC applications		
Configuration(s)	• CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_RX, MCPTT-Part_MCPTT-FC (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Ongoing private call between User 1 and User 2 with certain bearer conditions		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	Change in the conditions of the ongoing call
	2	check	The re-INVITE traverses the IMS Core without triggering any PCC mechanism
	3	check	re-INVITE 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

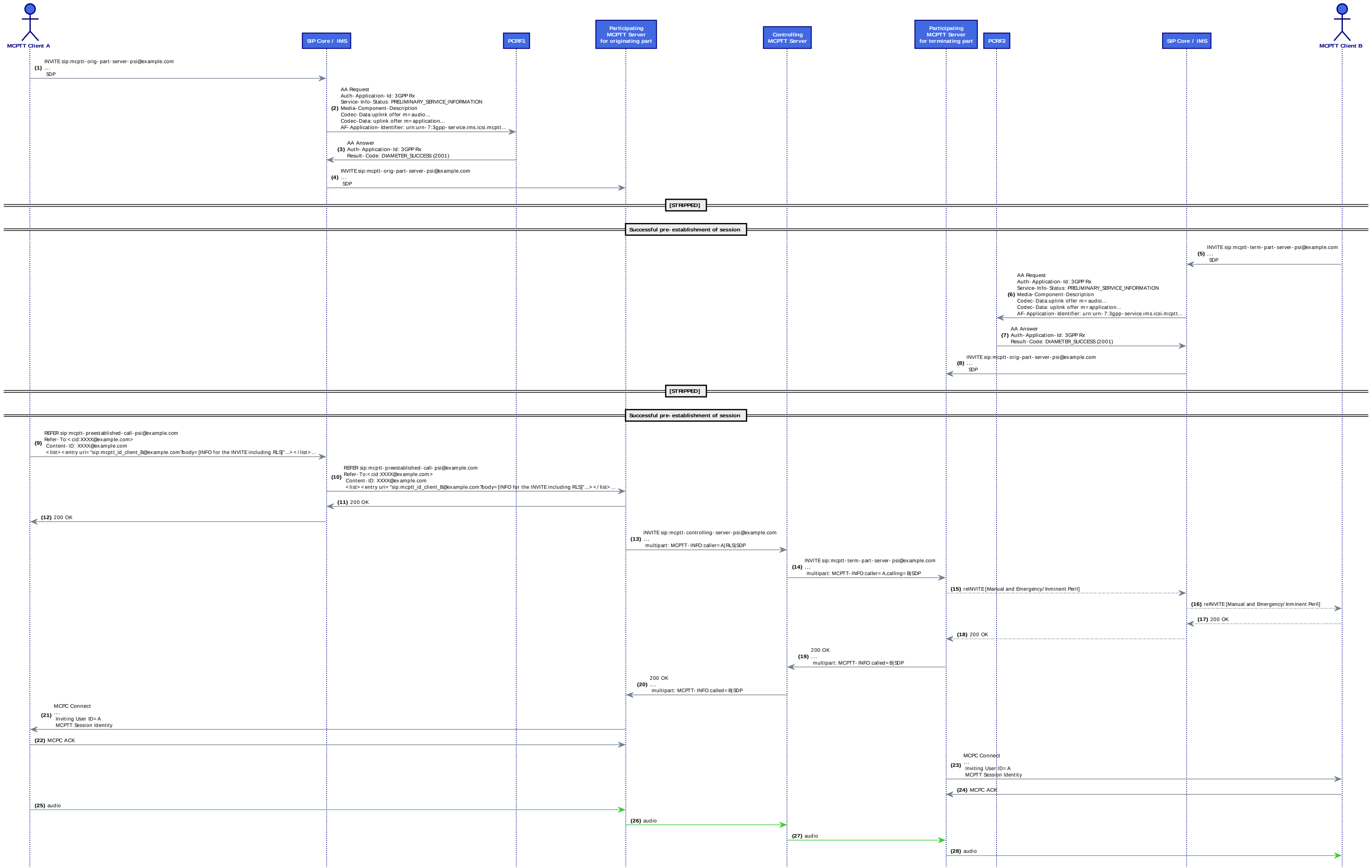

Figure 72: PCC/BEARERSETUP/03 (option a) Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 81: PCC/BEARERSETUP/03 ITD

Interoperability Test Description			
Identifier	PCC/BEARERSETUP/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and IMS PCC mechanisms supporting MCPTT applications		
Configuration(s)	• CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.8) • IMS_RX (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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 (re-INVITE 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

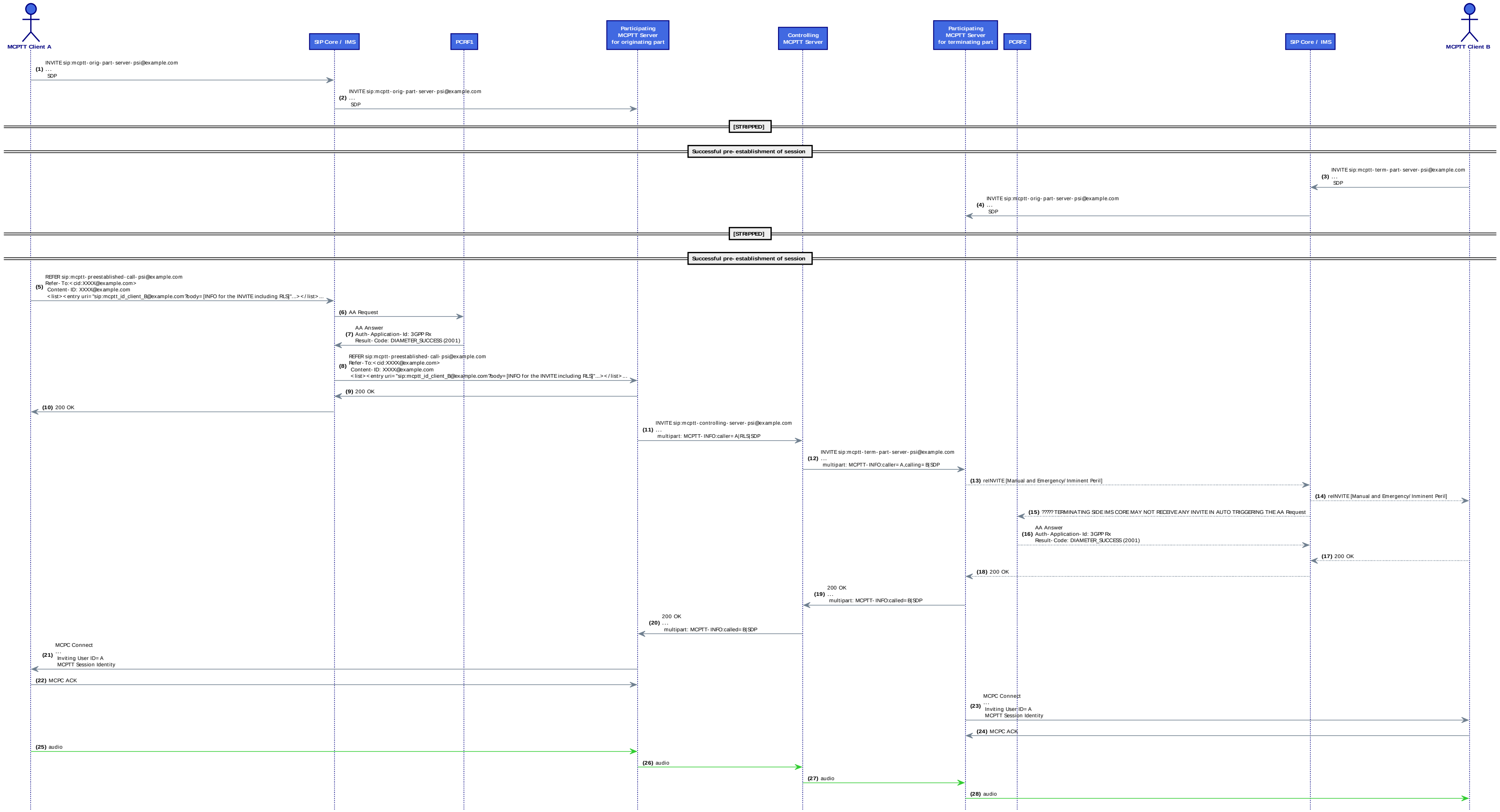

Figure 73: PCC/BEARERSETUP/03 (option b) Message Sequence

Table 82: PCC/BEARERSETUP/03 ITD

Interoperability Test Description			
Identifier	PCC/BEARERSETUP/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and IMS PCC mechanisms supporting MCPTT applications		
Configuration(s)	• CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.8) • IMS_RX (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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 (re-INVITE 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

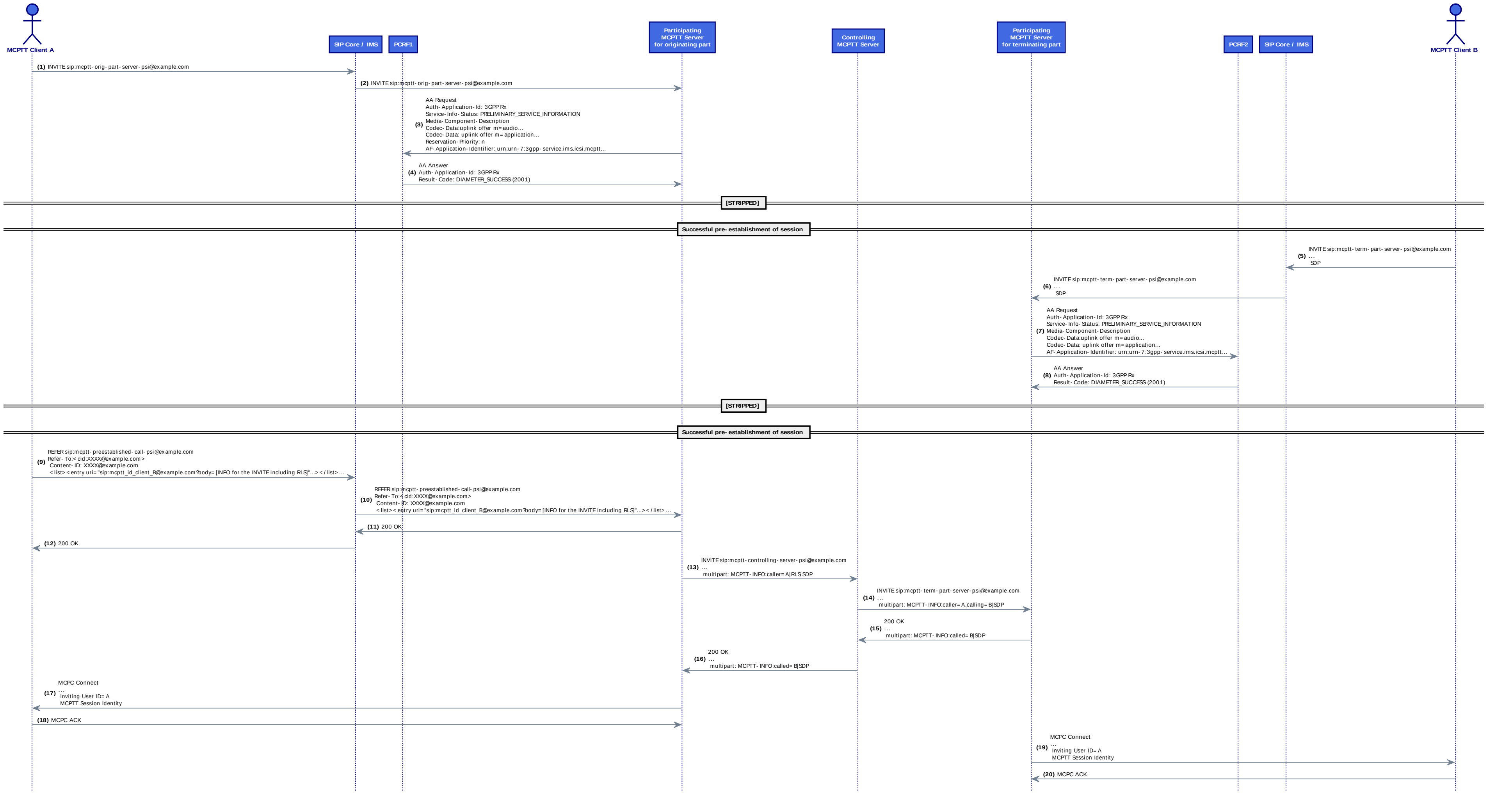

Figure 74: PCC/BEARERSETUP/04 (option a) Message Sequence

Interoperability Test Description

Table 83: PCC/BEARERSETUP/04 ITD

Interoperability Test Description			
Identifier	PCC/BEARERSETUP/04		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and IMS PCC mechanisms supporting MCPTT applications		
Configuration(s)	• CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.8) • IMS_RX (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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 (re-INVITE 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

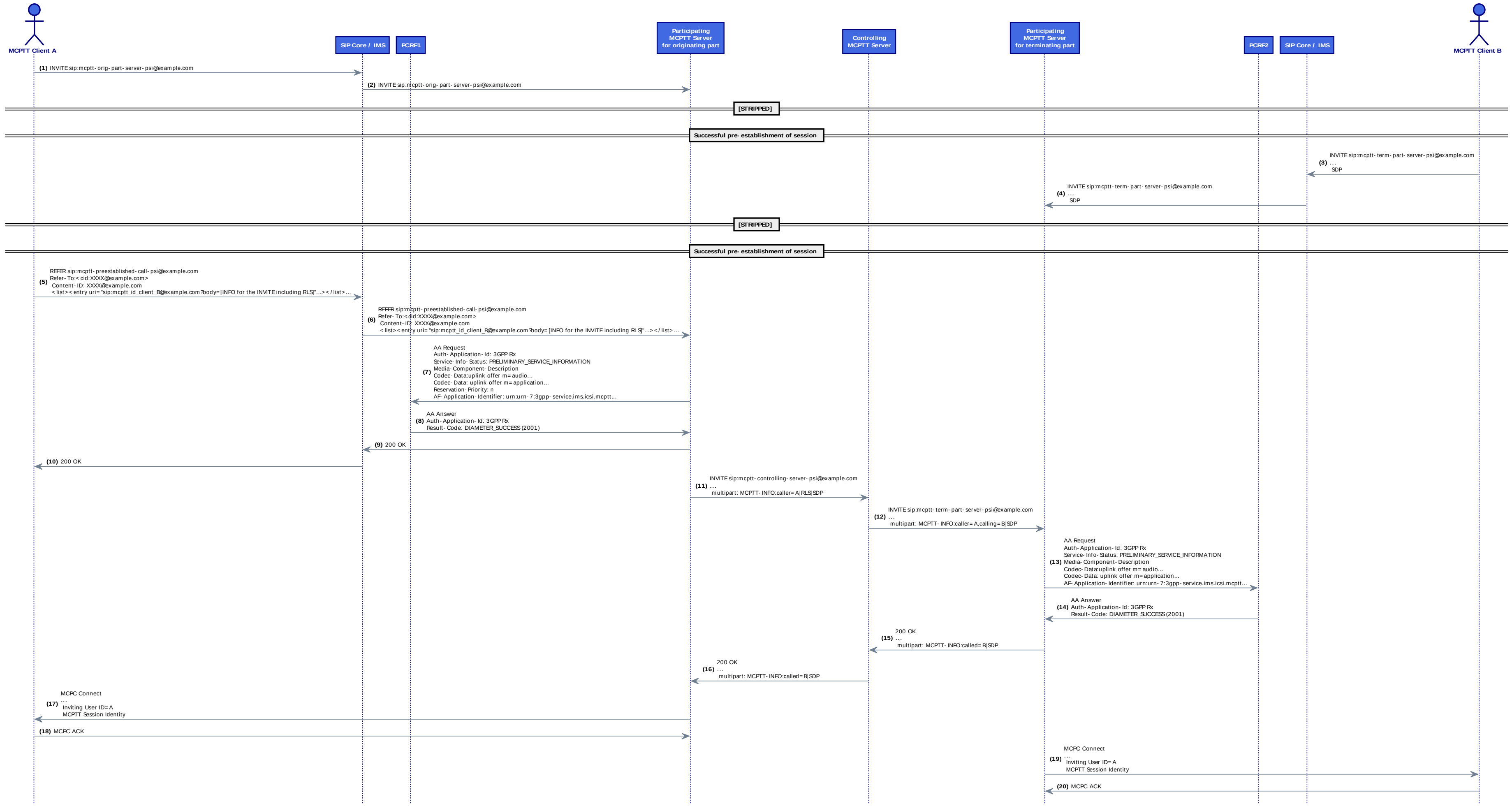

Figure 75: PCC/BEARERSETUP/04 (option b) Message Sequence

Table 84: PCC/BEARERSETUP/04 ITD

Interoperability Test Description			
Identifier	PCC/BEARERSETUP/04		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and IMS PCC mechanisms supporting MCPTT applications		
Configuration(s)	• CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.8) • IMS_RX (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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 (re-INVITE 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

7.5.7 Setup of a Unicast 5GS QoS Flow by SIP Core/IMS using Rx [PCC/5GSQOSFLOWSETUP/Rx/01]

According to clause 7.2.1 in ETSI TS 129 513 [46] when a session is initiated or modified the AF shall derive a Media-Component-Description AVP for Rx interface and use it in the Diameter interface with the PCF. Such signaling is equivalent to [PCC/BEARERSETUP/01] since the 5G mapping is carried out in the PCF itself and the mapping follows the clause 6.2 in ETSI TS 129 213 [47]. Actually, as defined in annex E in ETSI TS 129 214 [21], 5GS supports interworking with AFs via the Rx interface and, interworking with AFs related to Mission Critical services follows ETSI TS 123 280 [2]. In that Stage 2 TS there is no distinction for 5G.

Additionally, signalling flows related to the Rx are specified in ETSI TS 129 513 [46] with, among others, the following clarifications:

- description of the PCRF and the PCEF applies to the PCF and the SMF respectively;
- an IP-CAN bearer shall be interpreted as a 5GS QoS flow
- an IP-CAN session in the present document shall be interpreted as a 5GS PDU session of type IP;

- APN is equivalent to DNN.

Finally, there are specific AVPs to be exchanged in the Rx that are only applicable to 5G (i.e. EPS_FALLBACK and 5G-RAN-NAS-Release-Cause). If the so called CHEM feature is supported, the P-CSCF may provide the maximum packet loss rate(s) for uplink and/or downlink direction(s) in the Max-PLR-DL AVP and/or the Max-PLR-UL AVP for Rx interface. Neither the former nor the latter are depicted in the message sequence diagram, leading to an equivalent one to that in [PCC/BEARERSETUP/01].

NOTE: In annex B in ETSI TS 129 513 [46] the Rx (and N5) signalling can occur upon completion of both SDP offer and answer or (option b) first upon SDP offer and later upon answer. The latter allows initital provisioning of service information may be derived already from the SDP offer to enable a possible rejection of the service information by the PCF, obtained by the P-CSCF in time to reject the service with appropriate SIP signalling and to allow the P-CSCF to request network provided location information for inclusion in the SDP offer (among others, described in figure B.2.1-2 of ETSI TS 129 513 [46]). In the sequence diagrams along all PCC 5GS test cases option 2 will be used to be aligned with 4G [PCC/BEARERSETUP/01] but the single signalling at the end of the SDP exchange is valid.

The actual mapping to 4G/5G parameters is later carried out in the PCEF/SMF (i.e. see clause 4.5.27 in ETSI TS 129 212 [20]), and therefore out of the scope of the Plugtests.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

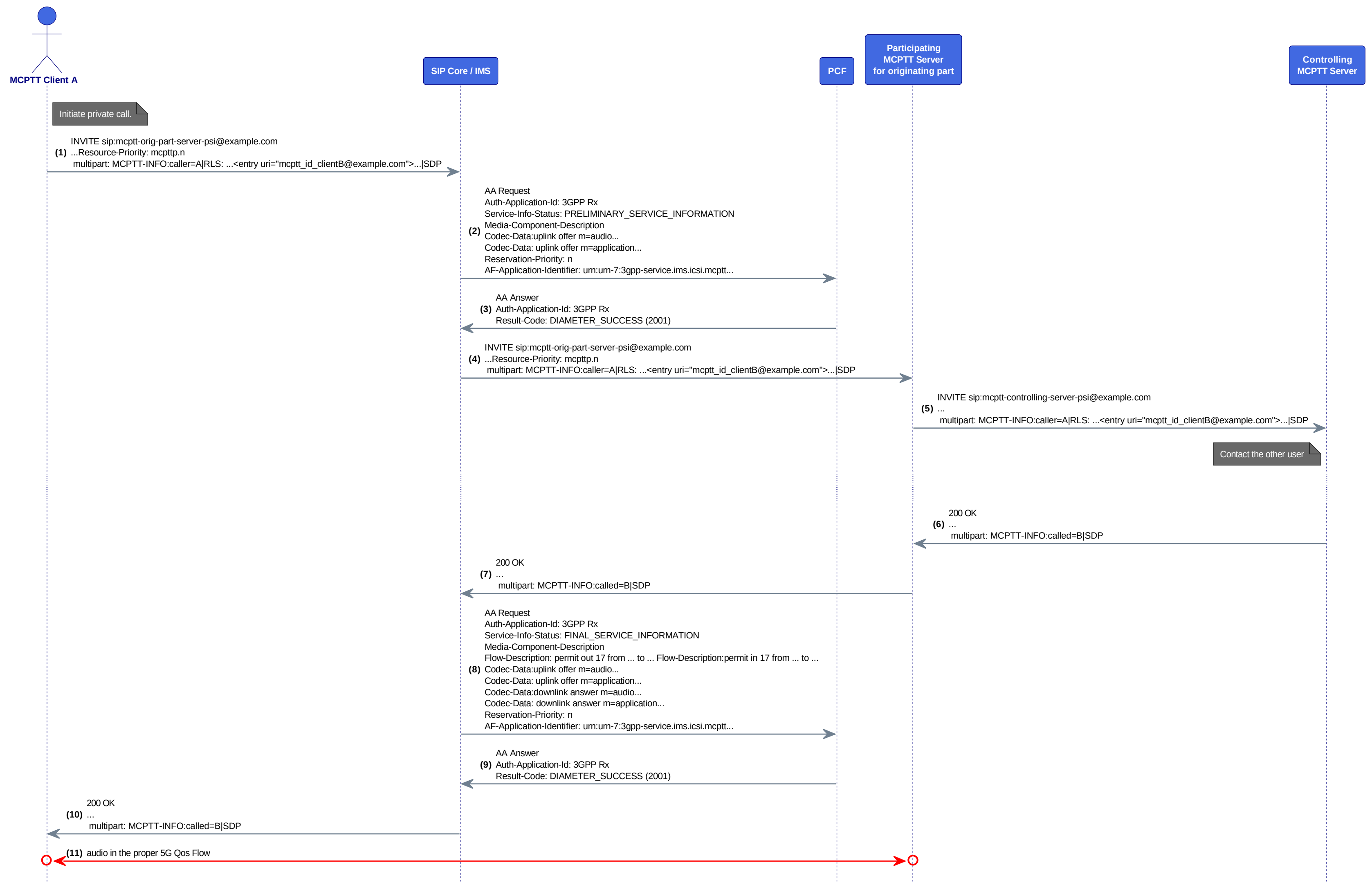

Figure 75a: PCC/5GSQOSFLOWSETUP/Rx/01 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 84a: PCC/5GSQOSFLOWSETUP/Rx/01

Interoperability Test Description			
Identifier	PCC/5GSQOSFLOWSETUP/Rx/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and PCC procedures involving 5GS QoS flow setup initiated by IMS/SIPCore using the Rx Interface		
Configuration(s)	• CFG_ONN_UNI-MC-5G-1 (clause 5.3)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• UE_MC-5G-DNN_5Qis • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6) • IMS_5G_RX (clause 6.4)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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 PCF using the Rx interface in a 5G environment
	4	check	User 2 accepts the private call and all the signalling is completed
	5	verify	Call connected, unicast MC 5G QoS flow established and media flows exchanged

7.5.8 Setup of a Unicast 5GS QoS Flow by MCPTT Participant AS using Rx [PCC/5GSQOSFLOWSETUP/Rx/02]

This test case is totally equivalent to [PCC/5GSQOSFLOWSETUP/Rx/01] but the AF is the MCPTT Participating AS directly.

Message Sequence Diagram

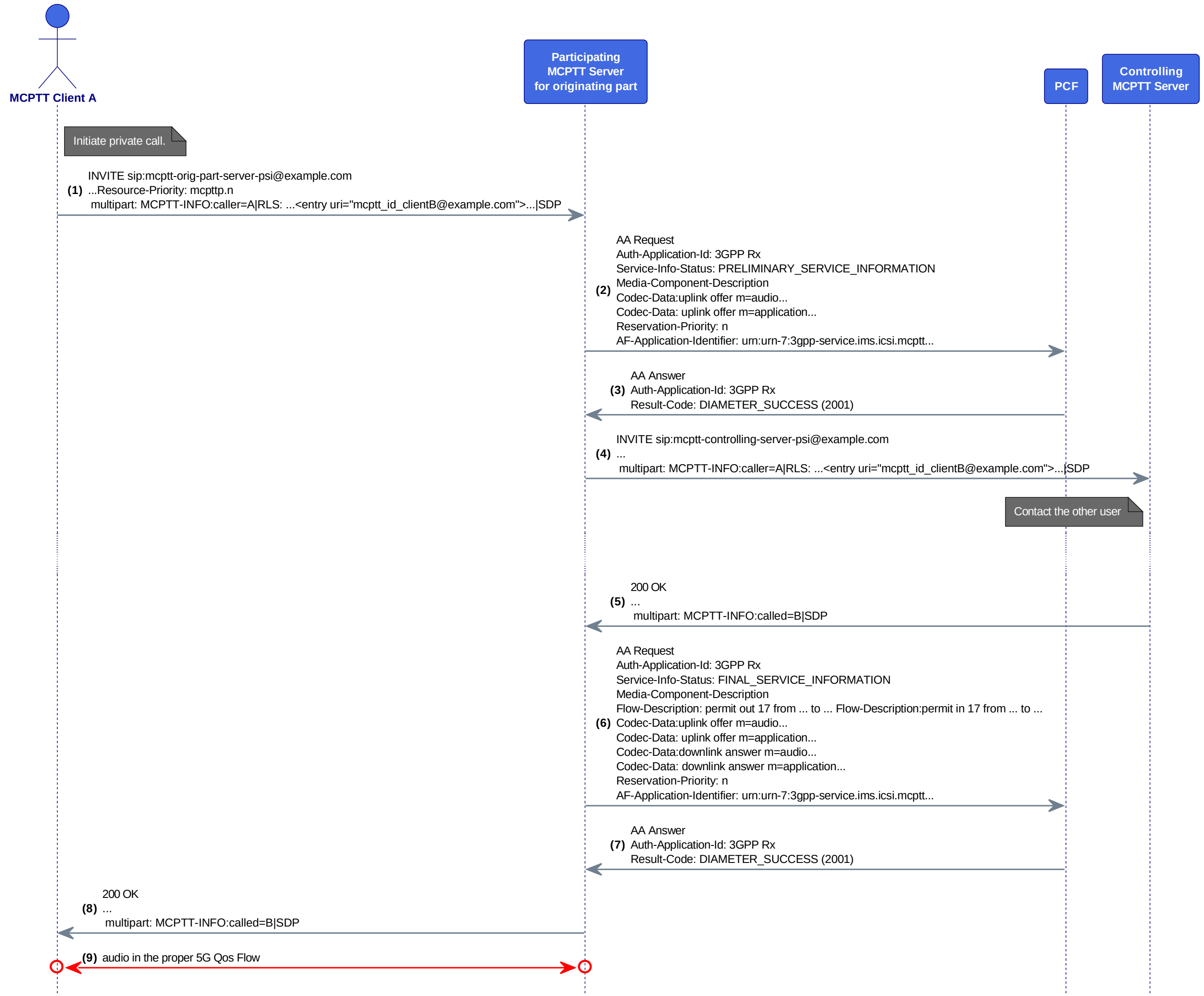

Figure 75b: PCC/5GSQOSFLOWSETUP/Rx/02 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 84b: PCC/5GSQOSFLOWSETUP/Rx/02

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">PCC/5GSQOSFLOWSETUP/Rx/02</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and PCC procedures involving 5GS QoS flow setup initiated by the MCPTT participating AS using the Rx Interface</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_UNI-MC-5G-1 (clause 5.3)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• UE_MC-5G-DNN_5Qis
• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL
• MCPTT-Part_MCPTT-FC (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)
• MCPTT-Part_5G_RX (clause 6.5)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="6">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>User 1 (mcptt_id_clientA@example.com) calls User 2 (mcptt_id_clientB@example.com)</td></tr>
<tr><td>2</td><td>check</td><td>Dialog creating INVITE received at the MCPTT Participating server</td></tr>
<tr><td>3</td><td>check</td><td>The participating server signals via DIAMETER the QoS requirement to the PCF using the Rx interface in a 5G environment</td></tr>
<tr><td>4</td><td>check</td><td>User 2 accepts the private call and all the signalling is completed</td></tr>
<tr><td>5</td><td>verify</td><td>Call connected, unicast MC 5G QoS flow established and media flows exchanged</td></tr>
</table>

7.5.9 Setup of a Unicast 5GS QoS Flow by SIP Core/IMS using N5 [PCC/5GSQOSFLOWSETUP/N5/01]

According to clause 7.2.1 in ETSI TS 129 513 [46] when a session is initiated or modified the AF shall derive a "Media Component" attribute for the N5 and use it through the defined REST API (more specifically the Npcf_PolicyAuthorization service) with the PCF.

Clause 7.2.3 later states that P-CSCF shall use the mapping rules in table 7.2.3-1 in ETSI TS 129 513 [46] for each SDP media component to derive a media component entry of the "medComponents" attribute from the SDP Parameters.

Furthermore, annex B in ETSI TS 129 513 [46] shows the interactions with SIP/SDP signalling of the IMS when the Npcf_PolicyAuthorization service is used by the P-CSCF and both, the PCF and the P-CSCF support the "IMS_SBI" feature.

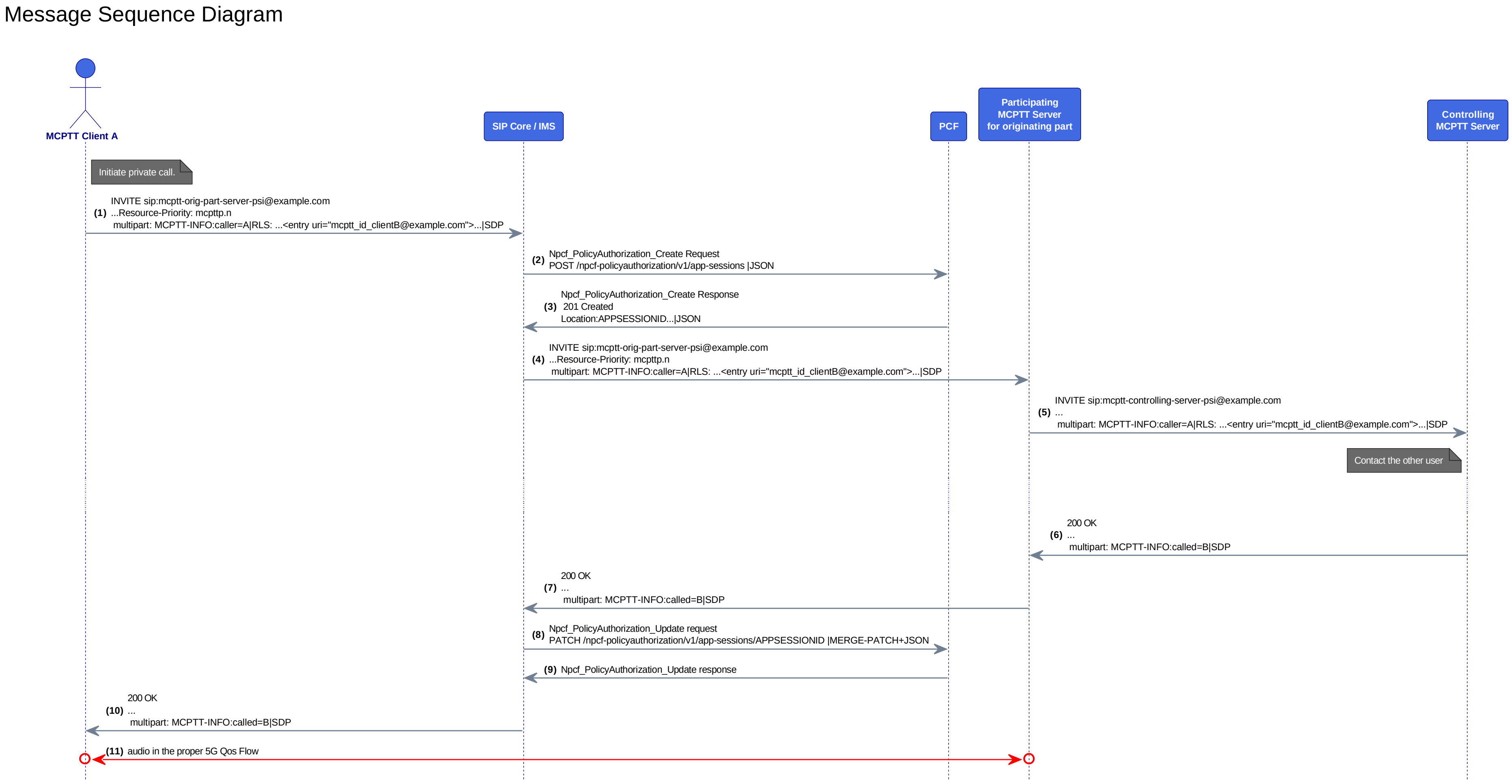

Figure 75c: PCC/5GSQOSFLOWSETUP/N5/01 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 84c: PCC/5GSQOSFLOWSETUP/N5/01

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">PCC/5GSQOSFLOWSETUP/N5/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and PCC procedures involving 5GS QoS flow setup initiated by IMS/SIPCore using the N5 Interface</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_UNI-MC-5G-1 (clause 5.3)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• UE_MC-5G-DNN_5Qis
• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL
• MCPTT-Part_MCPTT-FC (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)
• IMS_5G_N5 (clause 6.4)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="6">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>User 1 (mcptt_id_clientA@example.com) calls User 2 (mcptt_id_clientB@example.com)</td></tr>
<tr><td>2</td><td>check</td><td>Dialog creating INVITE received at the P-CSCF</td></tr>
<tr><td>3</td><td>check</td><td>The P-CSCF signals using the REST API the QoS requirement to the PCF using the N5 interface</td></tr>
<tr><td>4</td><td>check</td><td>User 2 accepts the private call and all the signalling is completed</td></tr>
<tr><td>5</td><td>verify</td><td>Call connected, unicast MC 5G QoS flow established and media flows exchanged</td></tr>
</table>

7.5.10 Setup of a Unicast 5GS QoS Flow by MCPTT Participant AS using N5 [PCC/5GSQOSFLOWSETUP/N5/02]

This test case is totally equivalent to [PCC/5GSQOSFLOWSETUP/N5/01] but the AF is the MCPTT Participating AS directly.

Message Sequence Diagram

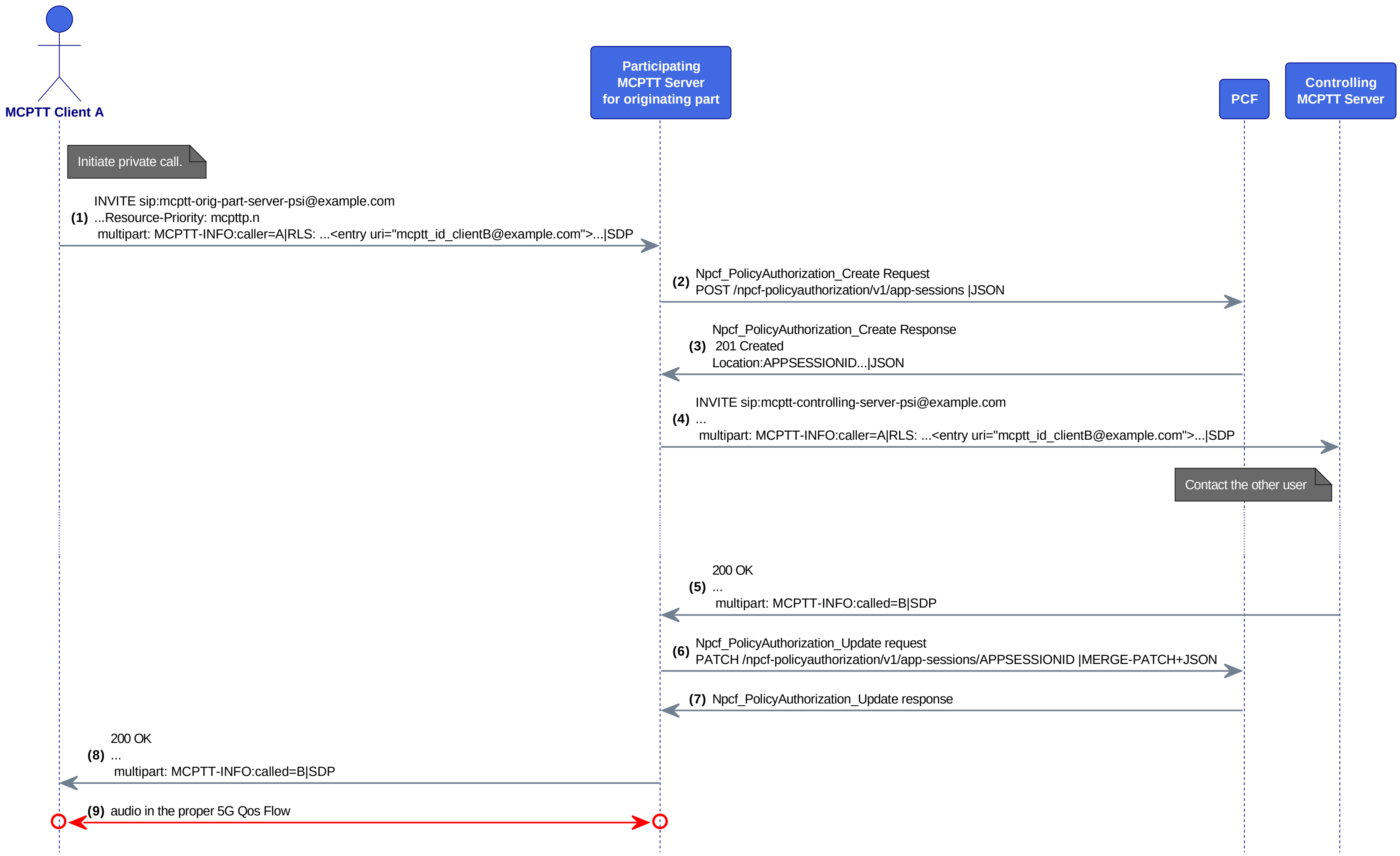

Figure 75d: PCC/5GSQOSFLOWSETUP/N5/02 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 84d: PCC/5GSQOSFLOWSETUP/N5/02

Interoperability Test Description			
Identifier	PCC/5GSQOSFLOWSETUP/N5/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and PCC procedures involving 5GS QoS flow setup initiated by the MCPTT participating AS using the N5 Interface		
Configuration(s)	• CFG_ONN_UNI-MC-5G-1 (clause 5.3)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• UE_MC-5G-DNN_5Qis • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6) • MCPTT-Part_5G_N5 (clause 6.5)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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
	3	check	The participating server signals via the REST API the QoS requirement to the PCF using the N5 interfacet
	4	check	User 2 accepts the private call and all the signalling is completed
	5	verify	Call connected, unicast MC 5G QoS flow established and media flows exchanged

7.5.11 Setup of a Unicast 5GS QoS Flow by SIP Core/IMS using N33 [PCC/5GSQOSFLOWSETUP/N33/01]

According to clause 4.1 in ETSI TS 129 522 [50] the NEF Northbound interface supports the procedures 8) Procedures for setting up an AF session with required QoS which correspond to the service 8) Nnef_AFsessionWithQoS service, supported by the NEF as defined in ETSI TS 123 502 [53] or ETSI TS 126 531 [54].

Therefore, according to clause 4.4.9 the procedures for setting up an AF session with required QoS in 5GS are described in clause 4.4.13 of ETSI TS 129 122 [51] with the following differences:

- description of the SCS/AS applies to the AF;
- description of the SCEF applies to the NEF.

Therefore (as detailed in clause 4.5.11 of ETSI TS 123 682 [52], for initial AF session creation, the AF shall send an HTTP POST message to the NEF for the "AF Session with Required QoS Subscriptions" resource.

After receiving the HTTP POST message, the NEF shall authorize the request and may check if the total number of requested QoS reference has exceeded the limit for the AF.

The whole stage 2 process is described in clause 4.15.6.6 in ETSI TS 123 502 [53] for setting up an AF session with required QoS procedure and clause 4.15.6.6 in ETSI TS 123 502 [53] for AF session with required QoS update procedure.

Message Sequence Diagram

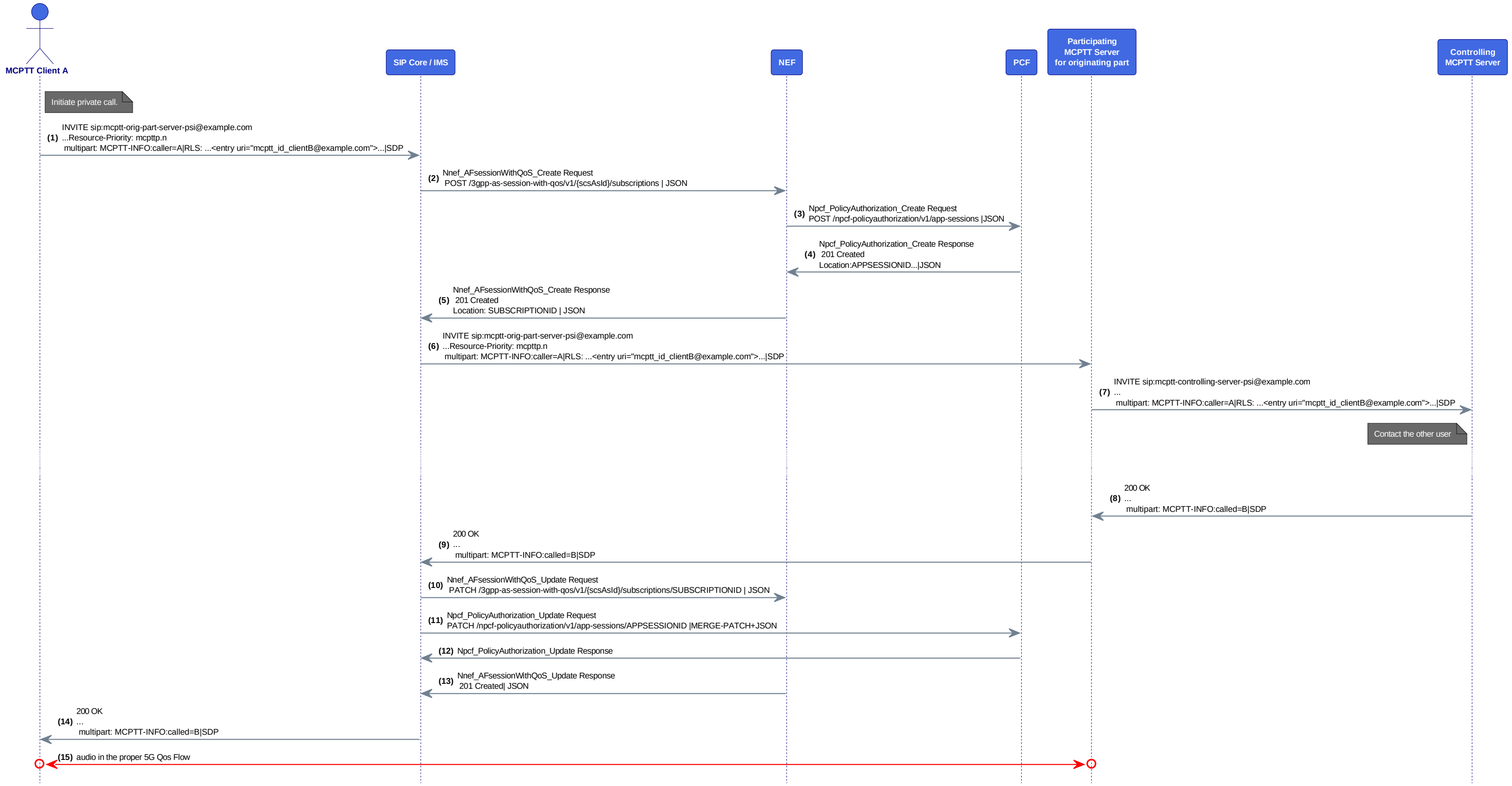

Figure 75e: PCC/5GSQOSFLOWSETUP/N33/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 84e: PCC/5GSQOSFLOWSETUP/N33/01

Interoperability Test Description			
Identifier	PCC/5GSQOSFLOWSETUP/N33/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and PCC procedures involving 5GS QoS flow setup initiated by IMS/SIPCore using the N33 Interface with the NEF		
Configuration(s)	• CFG_ONN_UNI-MC-5G-1 (clause 5.3)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• UE_MC-5G-DNN_5Qis • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6) • IMS_5G_335 (clause 6.4)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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 using the REST API the QoS requirement to the NEF using the N33 interface
	4	check	The NEF signals using the Nnef_PolicyAuthorization service with the PCF
	5	check	User 2 accepts the private call and all the signalling is completed
	6	verify	Call connected, unicast MC 5G QoS flow established and media flows exchanged

7.5.12 Setup of a Unicast 5GS QoS Flow by MCPTT Participant AS using N5 [PCC/5GSQOSFLOWSETUP/N33/02]

This test case is totally equivalent to [PCC/5GSQOSFLOWSETUP/N33/01] but the AF is the MCPTT Participating AS directly.

Message Sequence Diagram

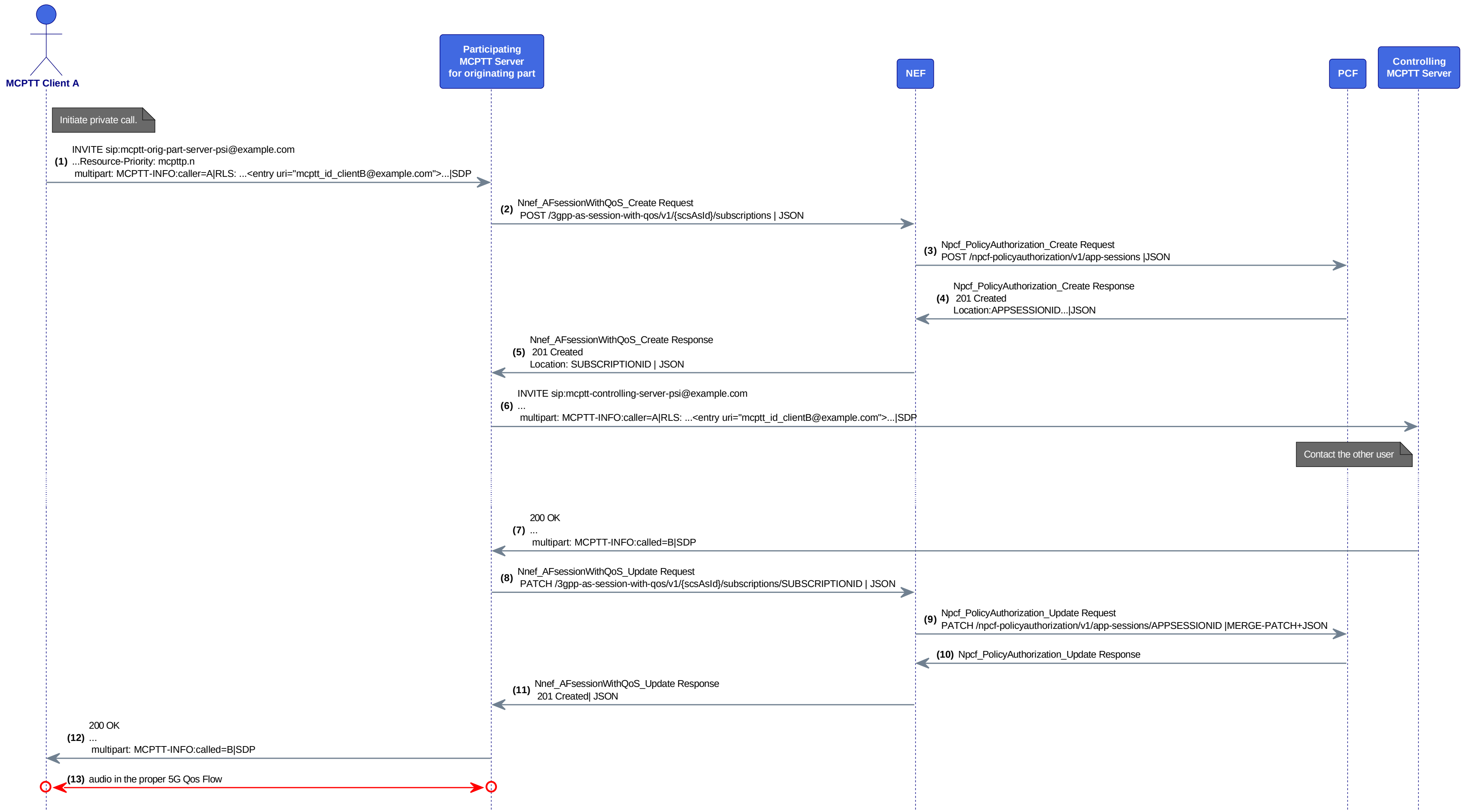

Figure 75f: PCC/5GSQOSFLOWSETUP/N33/02 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 84f: PCC/5GSQOSFLOWSETUP/N33/02

Interoperability Test Description			
Identifier	PCC/5GSQOSFLOWSETUP/N33/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and PCC procedures involving 5GS QoS flow setup initiated by the MCPTT participating AS using the N5 Interface		
Configuration(s)	• CFG_ONN_UNI-MC-5G-1 (clause 5.3)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• UE_MC-5G-DNN_5Qis • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6) • MCPTT-Part_5G_N33 (clause 6.5)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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
	3	check	The P-CSCF signals using the REST API the QoS requirement to the NEF using the N33 interface
	4	check	The NEF signals using the Nnef_PolicyAuthorization service with the PCF
	5	check	User 2 accepts the private call and all the signalling is completed
	6	verify	Call connected, unicast MC 5G QoS flow established and media flows exchanged

7.5.13 Update of a Unicast 5GS QoS Flow by SIP Core/IMS using Rx [PCC/5GSQOSFLOWUPDATE/Rx/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

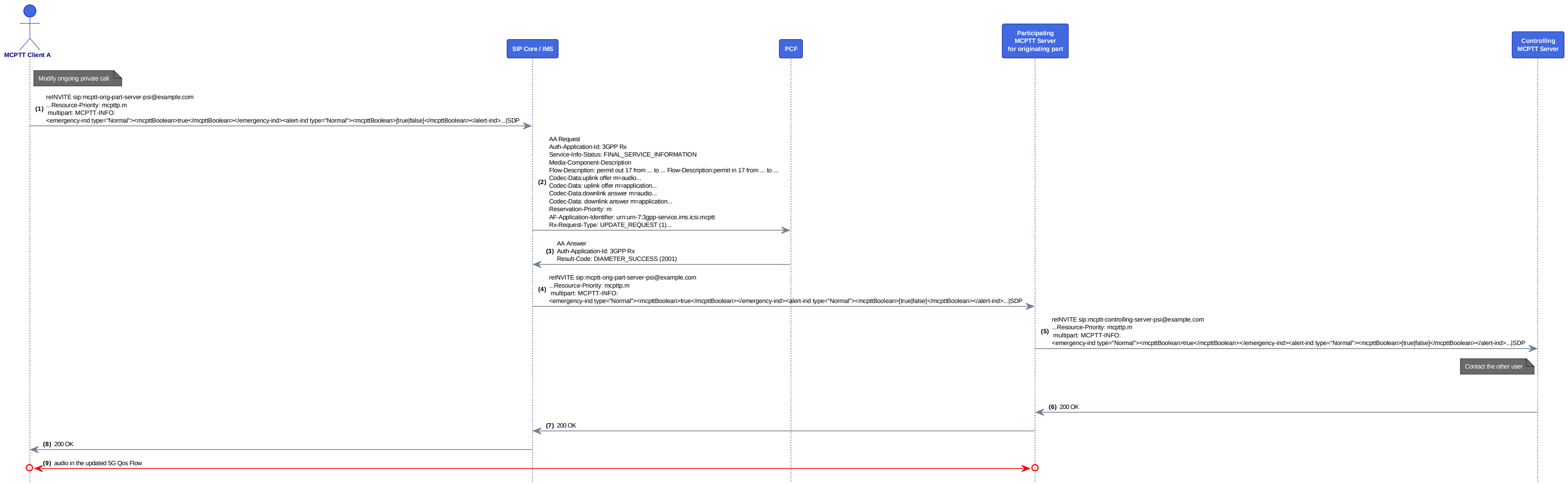

Figure 75g: PCC/5GSQOSFLOWUPDATE/Rx/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 84g: PCC/5GSQOSFLOWUPDATE/Rx/01

Interoperability Test Description			
Identifier	PCC/5GSQOSFLOWUPDATE/Rx/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and PCC procedures involving 5GS QoS flow update initiated by IMS/SIPCore using the Rx Interface		
Configuration(s)	• CFG_ONN_UNI-MC-5G-1 (clause 5.3)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• UE_MC-5G-DNN_5Qis • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6) • IMS_5G_RX (clause 6.4)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Ongoing private call between User 1 and User 2 with certain 5G QoS flow conditions		
Test Sequence	**Step**	**Type**	**Description**
	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 PCF using the Rx interface in a 5G environment
	4	check	User 2 accepts the re-INVITE and all the signalling is completed
	5	verify	Call connected, unicast MC 5G QoS flow updated and media flows exchanged

7.5.14 Update of a Unicast 5GS QoS Flow by MCPTT Participant AS using Rx [PCC/5GSQOSFLOWUPDATE/Rx/02]

This test case is totally equivalent to [PCC/5GSQOSFLOWUPDATE/Rx/01] but the AF is the MCPTT Participating AS directly.

Message Sequence Diagram

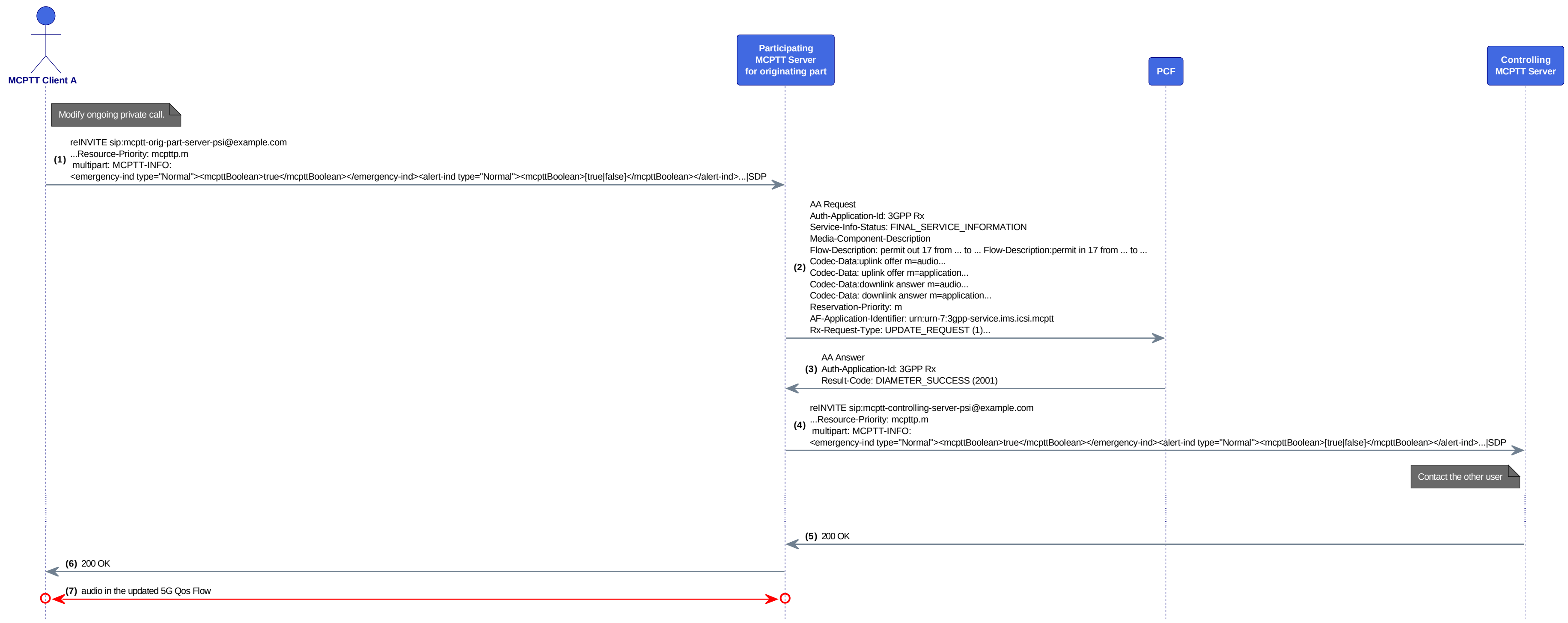

Figure 75h: PCC/5GSQOSFLOWUPDATE/Rx/02 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 84h: PCC/5GSQOSFLOWUPDATE/Rx/02

Interoperability Test Description			
Identifier	PCC/5GSQOSFLOWUPDATE/Rx/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and PCC procedures involving 5GS QoS flow update initiated by the MCPTT participating AS using the Rx Interface		
Configuration(s)	• CFG_ONN_UNI-MC-5G-1 (clause 5.3)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• UE_MC-5G-DNN_5Qis • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6) • MCPTT-Part_5G_RX (clause 6.5)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Ongoing private call between User 1 and User 2 with certain 5G QoS flow conditions		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	Change in the conditions of the ongoing call
	2	check	(re)INVITE received at the MCPTT Participating server
	3	check	The participating server signals via DIAMETER the new QoS requirement to the PCF using the Rx interface in a 5G environment
	4	check	User 2 accepts the re-INVITE and all the signalling is completed
	5	verify	Call connected, unicast MC 5G QoS flow updated and media flows exchanged

7.5.15 Update of a Unicast 5GS QoS Flow by SIP Core/IMS using N5 [PCC/5GSQOSFLOWUPDATE/N5/01]

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 N5 interface 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

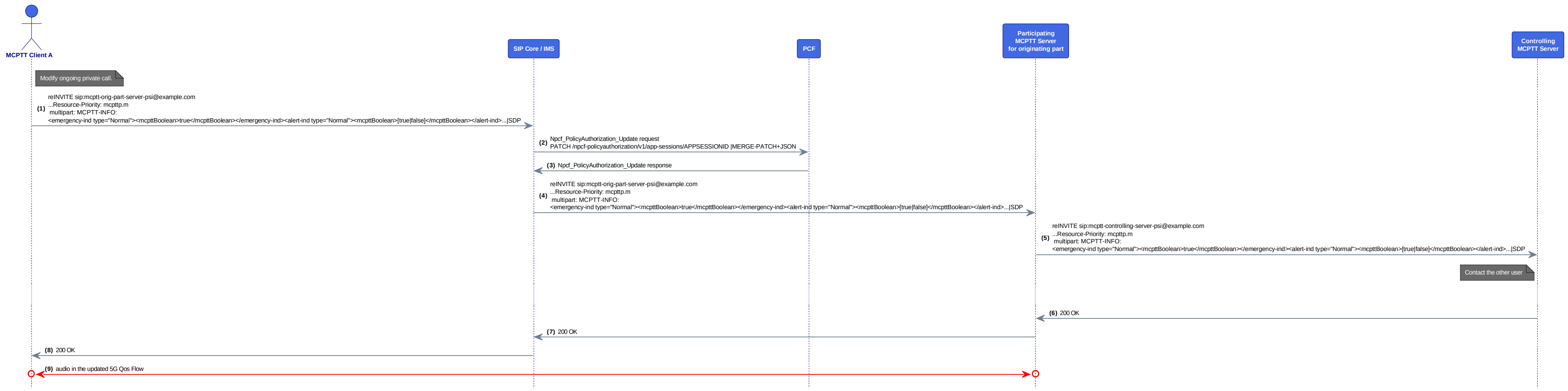

Figure 75i: PCC/5GSQOSFLOWUPDATE/N5/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 84i: PCC/5GSQOSFLOWUPDATE/N5/01

Interoperability Test Description			
Identifier	PCC/5GSQOSFLOWUPDATE/N5/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and PCC procedures involving 5GS QoS flow update initiated by IMS/SIPCore using the N5 Interface		
Configuration(s)	• CFG_ONN_UNI-MC-5G-1 (clause 5.3)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• UE_MC-5G-DNN_5Qis • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6) • IMS_5G_N5 (clause 6.4)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Ongoing private call between User 1 and User 2 with certain 5G QoS flow conditions		
Test Sequence	**Step**	**Type**	**Description**
	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 using the REST API the new QoS requirement to the PCF using the N5 interface
	4	check	User 2 accepts the re-INVITE and all the signalling is completed
	5	verify	Call connected, unicast MC 5G QoS flow updated and media flows exchanged

7.5.16 Update of a Unicast 5GS QoS Flow by MCPTT Participant AS using N5 [PCC/5GSQOSFLOWUPDATE/N5/02]

This test case is totally equivalent to [PCC/5GSQOSFLOWUPDATE/N5/01] but the AF is the MCPTT Participating AS directly.

Message Sequence Diagram

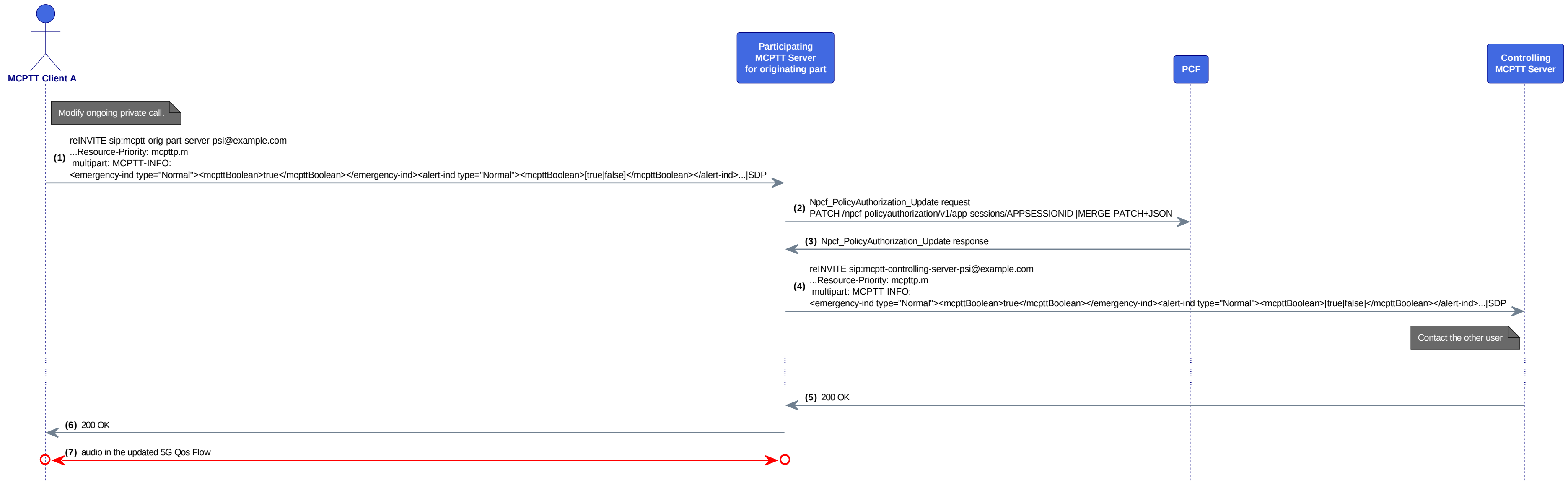

Figure 75j: PCC/5GSQOSFLOWUPDATE/N5/02 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 84j: PCC/5GSQOSFLOWUPDATE/N5/02

Interoperability Test Description			
Identifier	PCC/5GSQOSFLOWUPDATE/N5/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and PCC procedures involving 5GS QoS flow update initiated by the MCPTT participating AS using the N5 Interface		
Configuration(s)	• CFG_ONN_UNI-MC-5G-1 (clause 5.3)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• UE_MC-5G-DNN_5Qis • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6) • MCPTT-Part_5G_N5 (clause 6.5)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	Change in the conditions of the ongoing call
	2	check	(re)INVITE received at the MCPTT Participating server
	3	check	The participating server signals via the REST API the new QoS requirement to the PCF using the N5 interfacet
	4	check	User 2 accepts the re-INVITE and all the signalling is completed
	5	verify	Call connected, unicast MC 5G QoS flow updated and media flows exchanged

7.5.17 Update of a Unicast 5GS QoS Flow by SIP Core/IMS using N33 [PCC/5GSQOSFLOWUPDATE/N33/01]

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 N55 interface 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

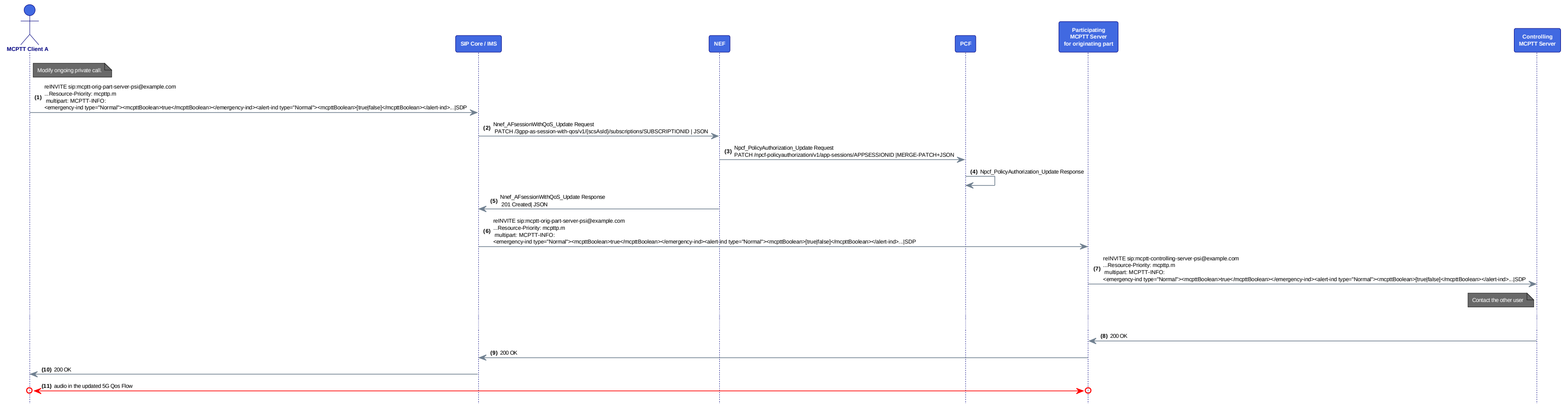

Figure 75k: PCC/5GSQOSFLOWUPDATE/N33/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 84k: PCC/5GSQOSFLOWUPDATE/N33/01

Interoperability Test Description			
Identifier	PCC/5GSQOSFLOWUPDATE/N33/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and PCC procedures involving 5GS QoS flow update initiated by IMS/SIPCore using the N33 Interface with the NEF		
Configuration(s)	• CFG_ONN_UNI-MC-5G-1 (clause 5.3)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• UE_MC-5G-DNN_5Qis • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6) • IMS_5G_335 (clause 6.4)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Ongoing private call between User 1 and User 2 with certain 5G QoS flow conditions		
Test Sequence	**Step**	**Type**	**Description**
	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 using the REST API the new QoS requirement to the NEF using the N33 interface
	4	check	The NEF signals using the Nnef_PolicyAuthorization service with the PCF
	5	check	User 2 accepts the private call and all the signalling is completed
	6	verify	Call connected, unicast MC 5G QoS flow established and media flows exchanged

7.5.18 Update of a Unicast 5GS QoS Flow by MCPTT Participant AS using N5 [PCC/5GSQOSFLOWUPDATE/N33/02]

This test case is totally equivalent to [PCC/5GSQOSFLOWUPDATE/N33/01] but the AF is the MCPTT Participating AS directly.

Message Sequence Diagram

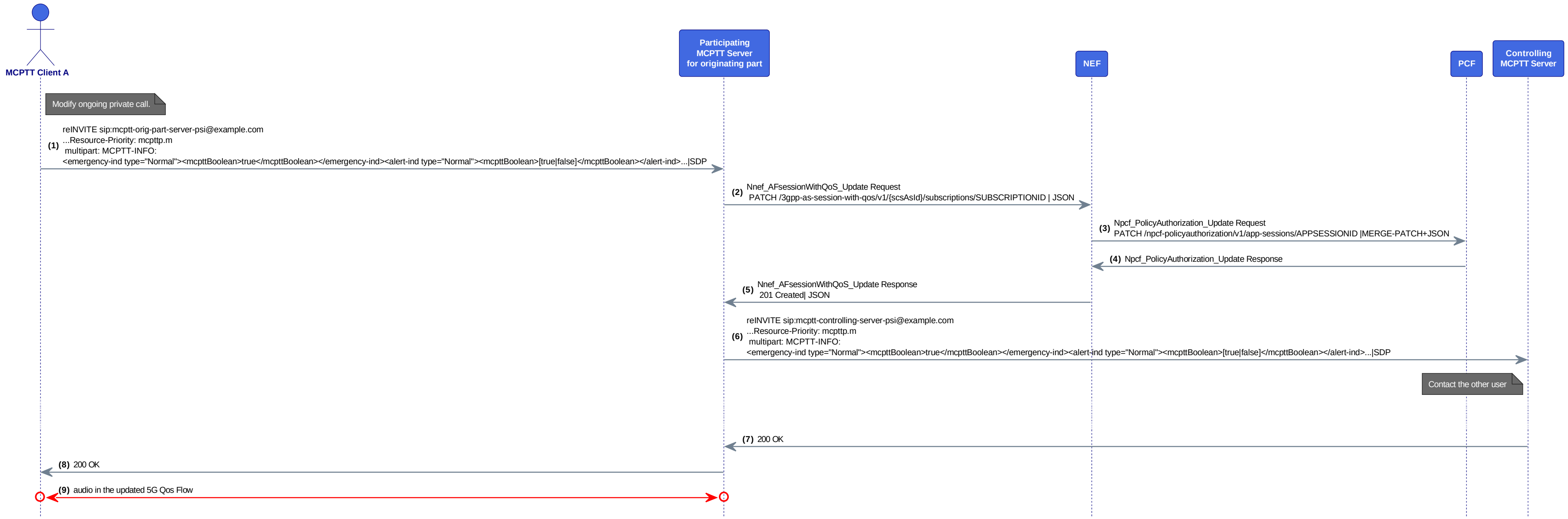

Figure 75l: PCC/5GSQOSFLOWUPDATE/N33/02 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 84l: PCC/5GSQOSFLOWUPDATE/N33/02

Interoperability Test Description			
Identifier	PCC/5GSQOSFLOWUPDATE/N33/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and PCC procedures involving 5GS QoS flow update initiated by the MCPTT participating AS using the N5 Interface		
Configuration(s)	• CFG_ONN_UNI-MC-5G-1 (clause 5.3)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• UE_MC-5G-DNN_5Qis • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6) • MCPTT-Part_5G_N33 (clause 6.5)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Ongoing private call between User 1 and User 2 with certain 5G QoS flow conditions		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	Change in the conditions of the ongoing call
	2	check	(re)INVITE received at the MCPTT Participating server
	3	check	The P-CSCF signals using the REST API the new QoS requirement to the NEF using the N33 interface
	4	check	The NEF signals using the Nnef_PolicyAuthorization service with the PCF
	5	check	User 2 accepts the re-INVITE and all the signalling is completed
	6	verify	Call connected, unicast MC 5G QoS flow updated 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

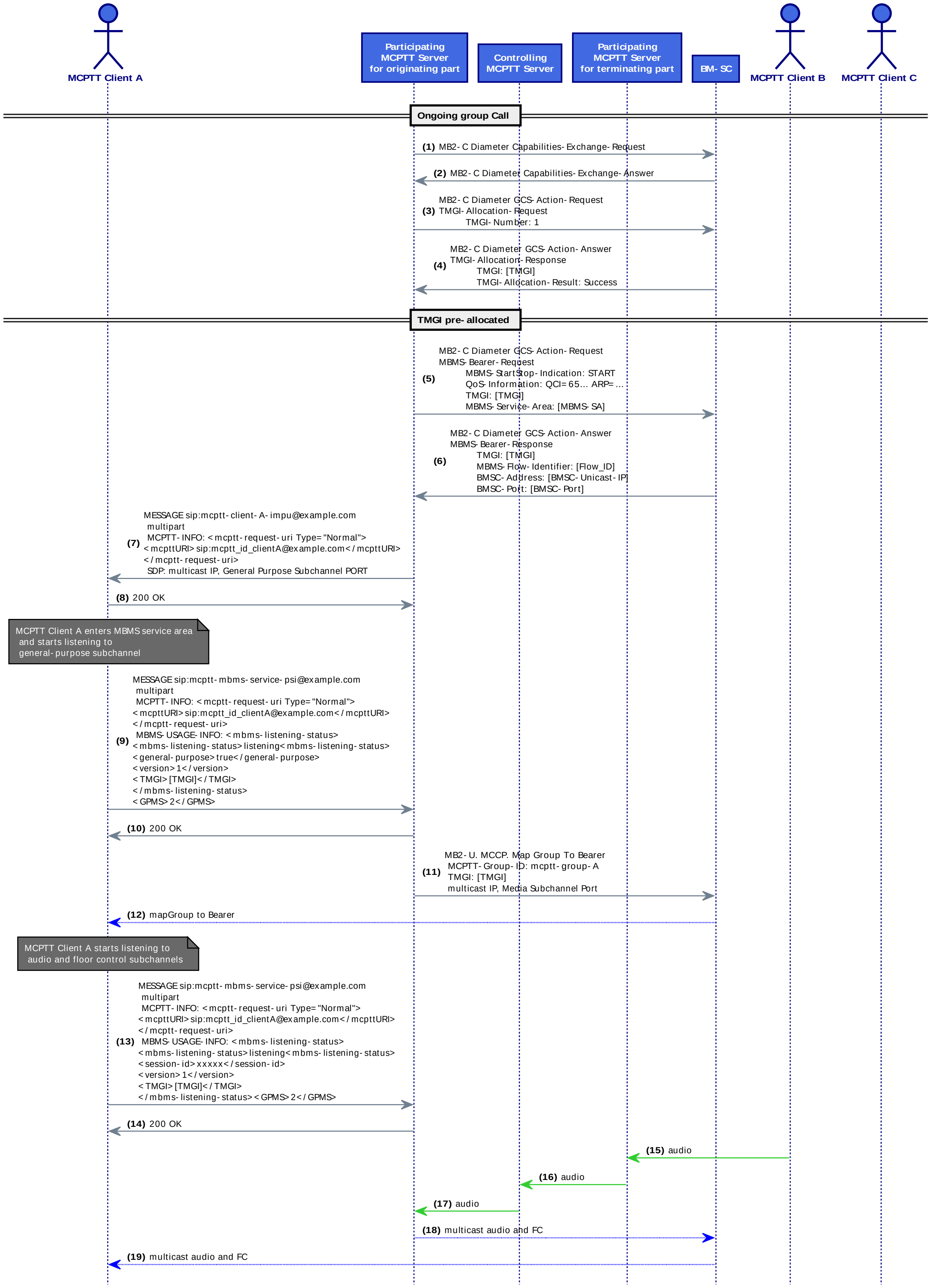

Figure 76: EMBMS/ACTIVATEBEARER/WPRETMGI/01 Message Sequence

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] MCCP 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_SUBSCHANNEL_PORT]
  Media Port: [MEDIA_SUBSCHANNEL_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			
Identifier	EMBMS/ACTIVATEBEARER/WPRETMGI/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • Diameter in MB2-C (see ETSI TS 129 468 [23])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC • MCPTTClient_EMBMS (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id - Ongoing prearranged group call		
Test Sequence	**Step**	**Type**	**Description**
	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

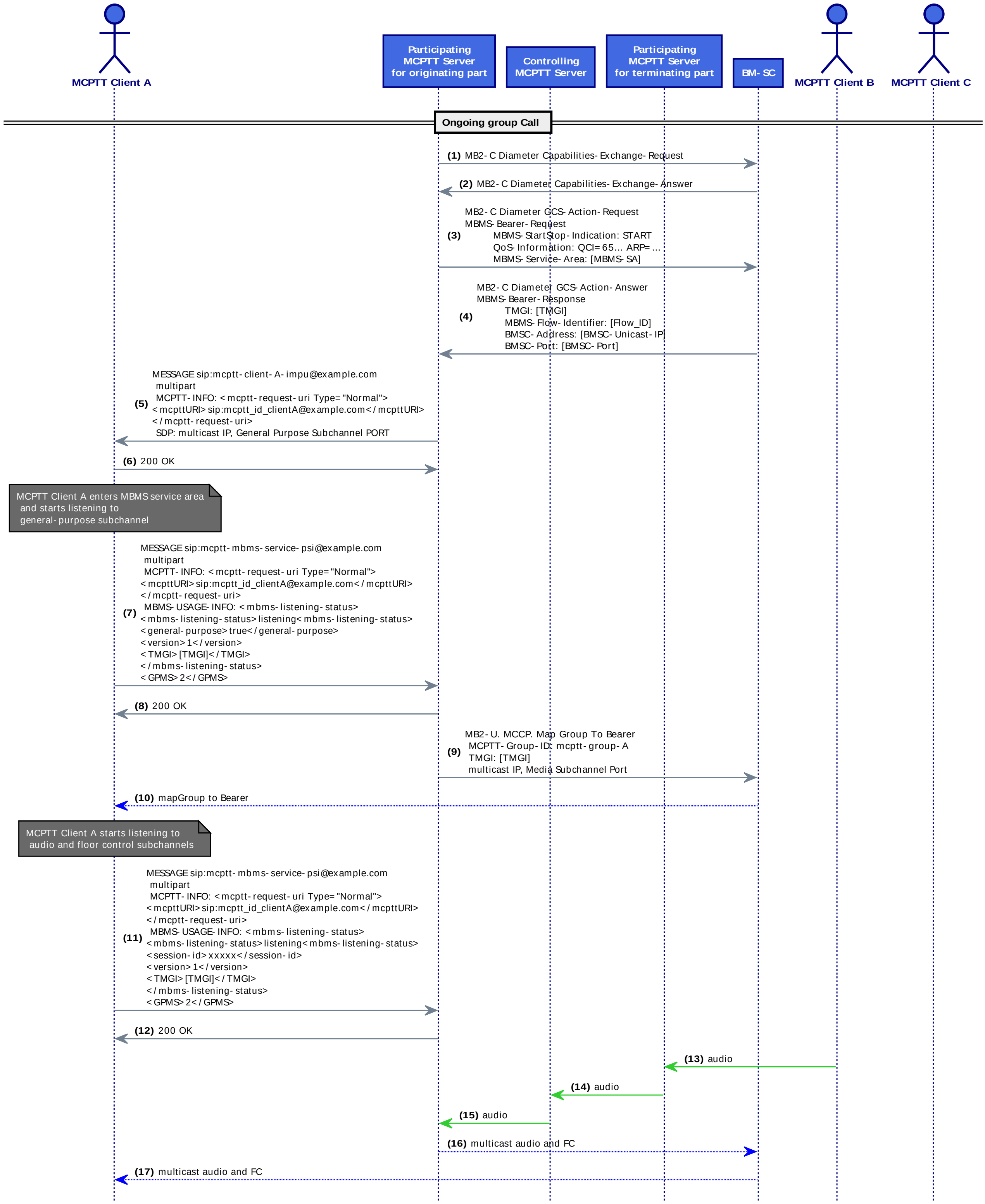

Figure 77: EMBMS/ACTIVATEBEARER/WOPRETMGI/01 Message Sequence

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			
Identifier	EMBMS/ACTIVATEBEARER/WOPRETMGI/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • Diameter in MB2-C (see ETSI TS 129 468 [23])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC • MCPTTClient_EMBMS (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id Ongoing prearranged group call		
Test Sequence	**Step**	**Type**	**Description**
	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

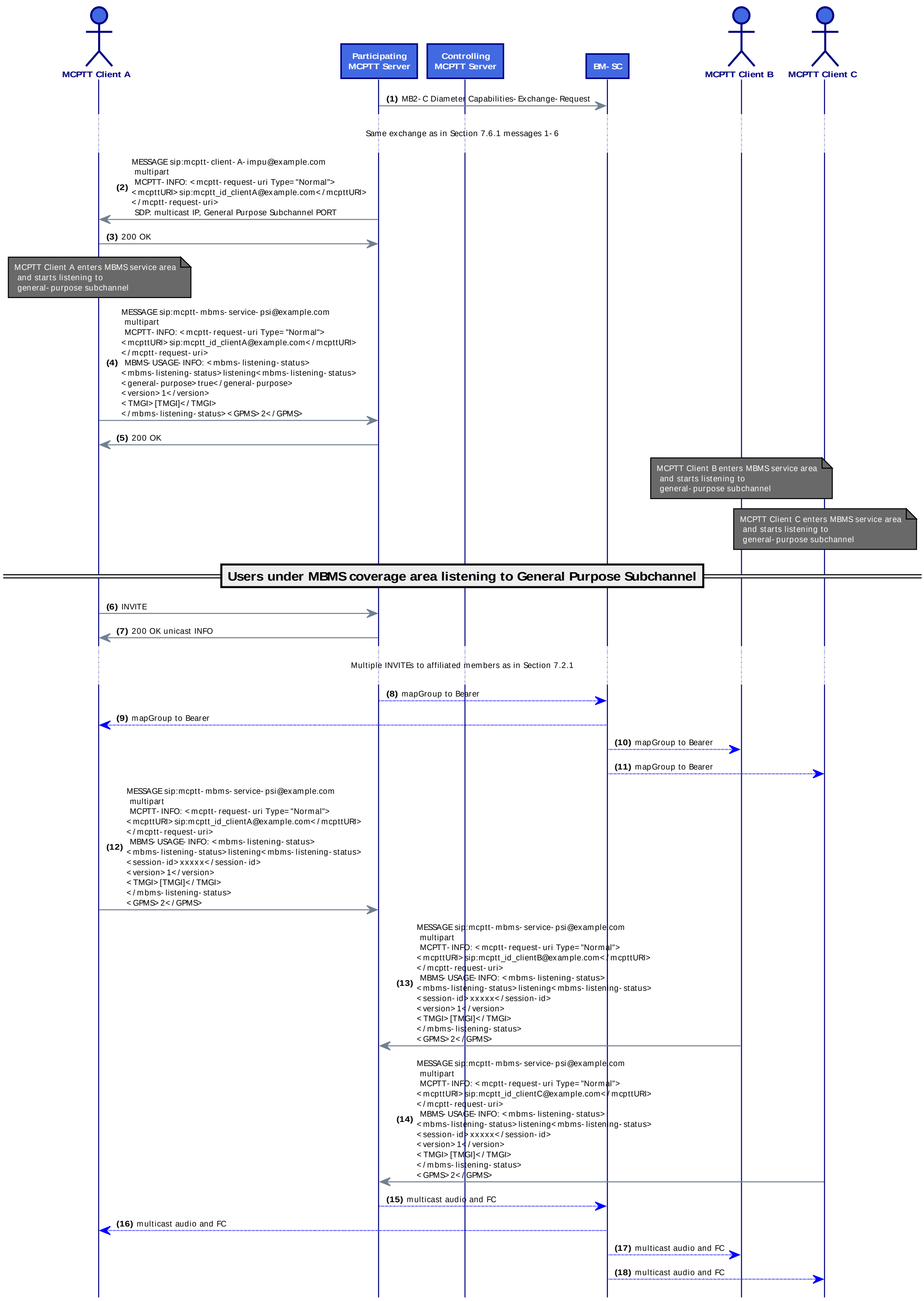

Figure 78: EMBMS/PREBEARER/WPRETMGI/01 Message Sequence

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			
Identifier	EMBMS/PREBEARER/WPRETMGI/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • Diameter in MB2-C (see ETSI TS 129 468 [23])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC • MCPTTClient_EMBMS (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	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

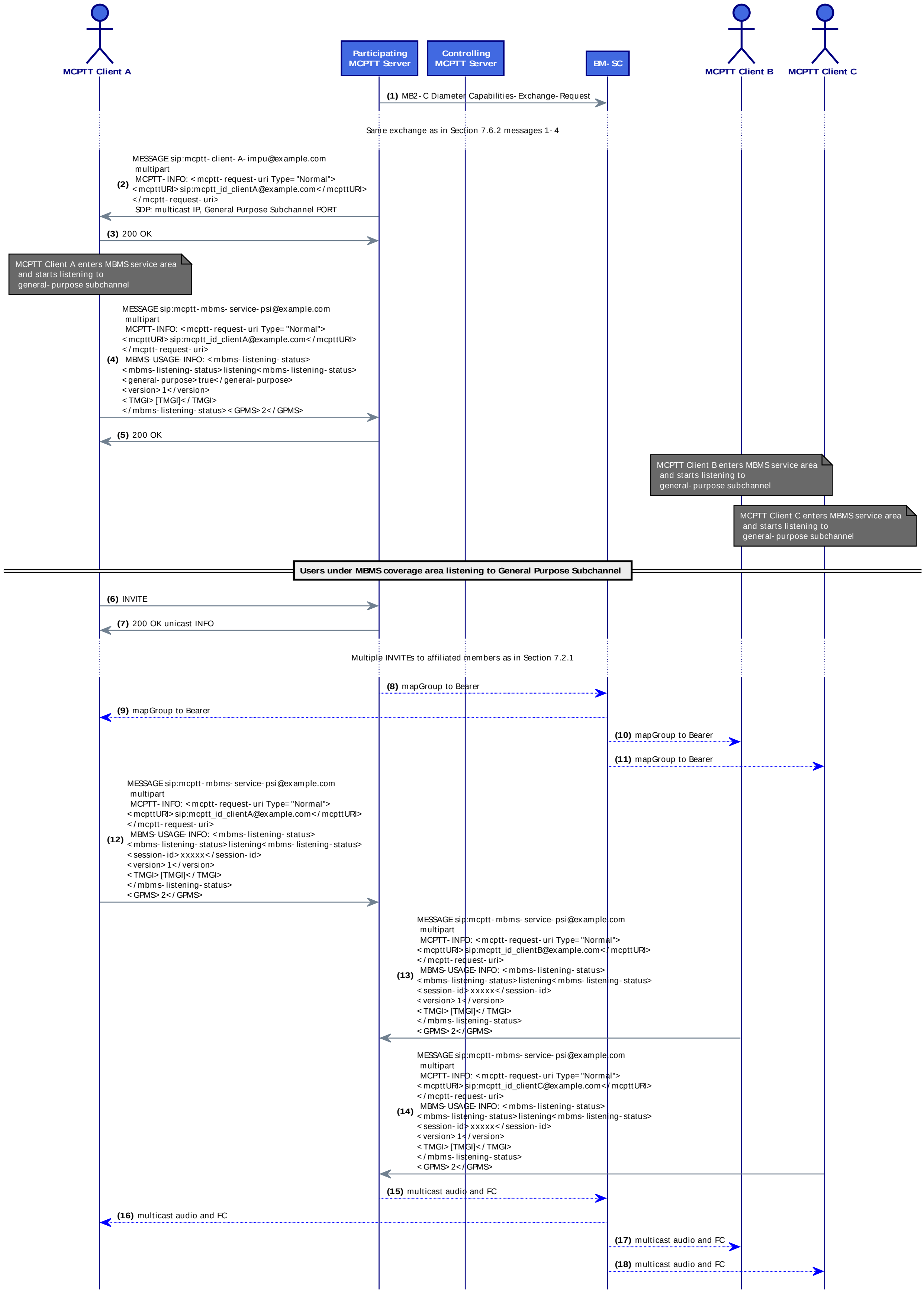

Figure 79: EMBMS/PREBEARER/WOPRETMGI/01 Message Sequence

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>

--[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			
Identifier	EMBMS/PREBEARER/WOPRETMGI/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • Diameter in MB2-C (see ETSI TS 129 468 [23])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC • MCPTTClient_EMBMS (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	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 re-INVITE 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

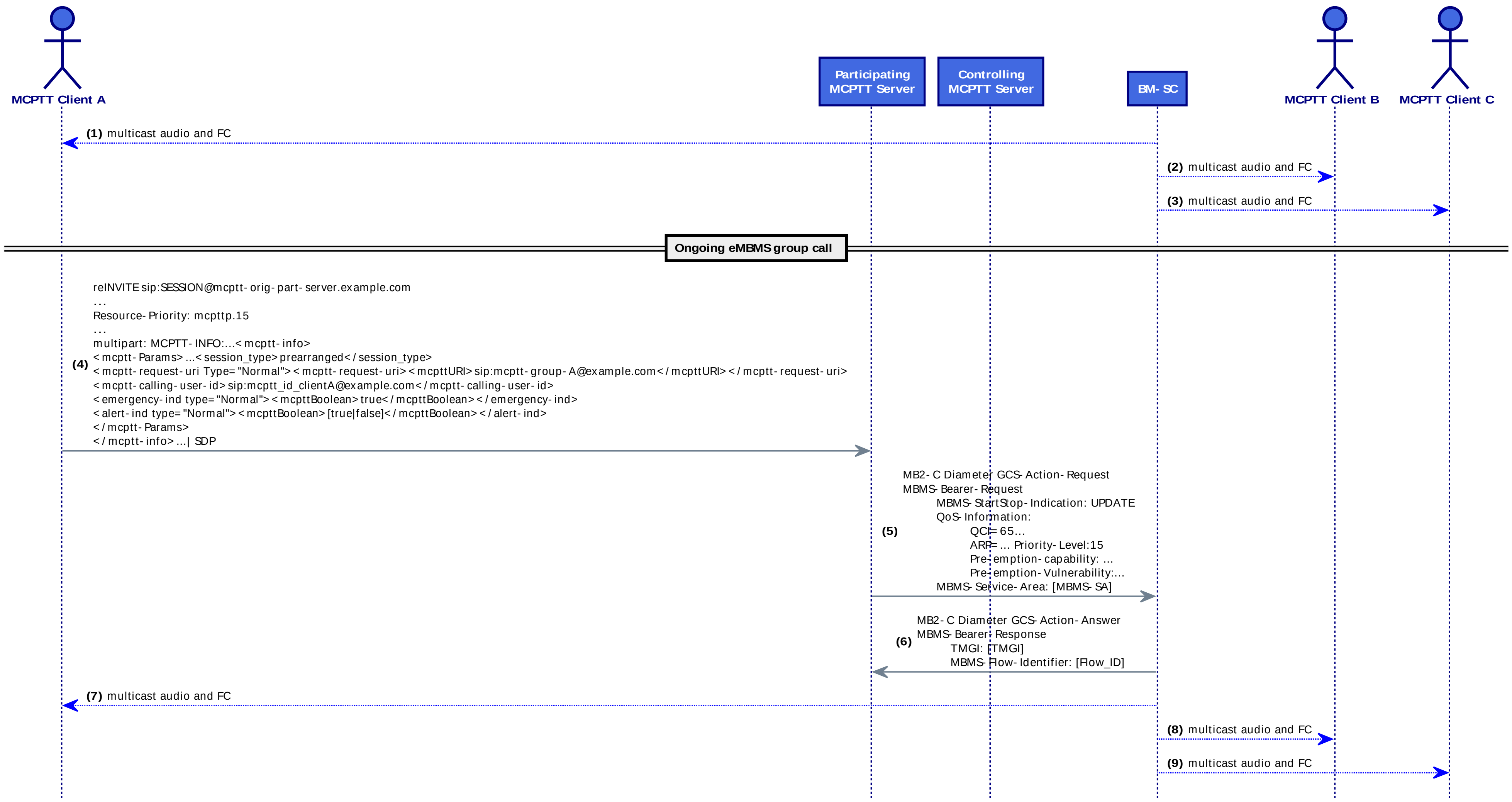

Figure 80: EMBMS/MODIFYBEARER/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 89: EMBMS/MODIFYBEARER/01 ITD

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">EMBMS/MODIFYBEARER/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">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</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• Diameter in MB2-C (see ETSI TS 129 468 [23])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC
• MCPTTClient_EMBMS (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL
• MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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
• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id
• Ongoing group call and MBMS bearer stablished</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="5">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>MCPTT User re-INVITEs to notify the new emergency call condition using proper <emergency-ind></td></tr>
<tr><td>2</td><td>stimulus</td><td>Participating sends a GCS-Action-Request to the BM-SC to UPDATE the bearer</td></tr>
<tr><td>3</td><td>stimulus</td><td>BM-SC modifies the bearer according and sends a response back</td></tr>
<tr><td>4</td><td>check</td><td>MBMS bearer updated with emergency associated QoS Information</td></tr>
</table>

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

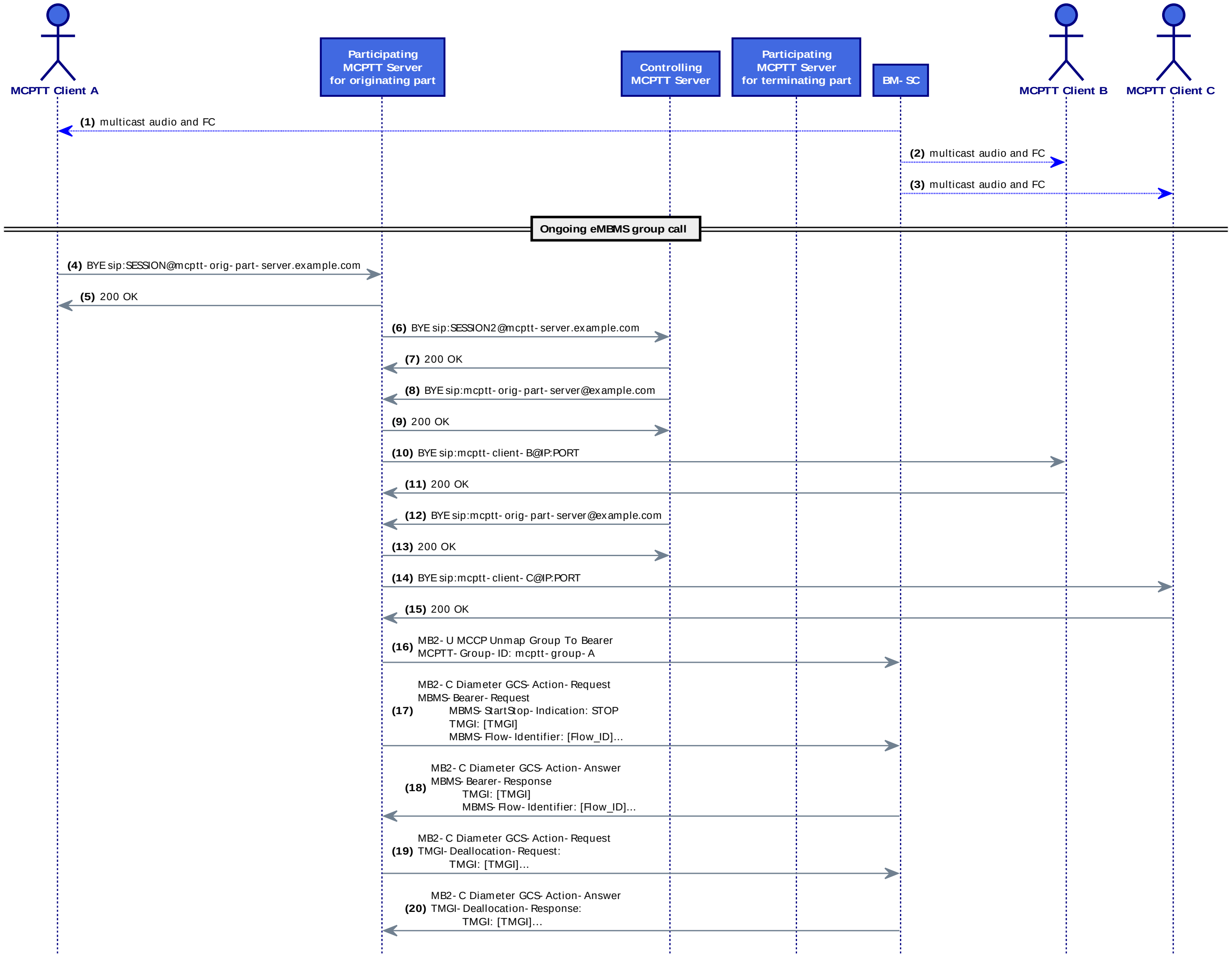

Figure 81: EMBMS/DEACTBEARER/WTMGIDEA/01 Message Sequence

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			
Identifier	EMBMS/DEACTBEARER/WTMGIDEA/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • Diameter in MB2-C (see ETSI TS 129 468 [23])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC • MCPTTClient_EMBMS (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • Ongoing group call and MBMS bearer stablished		
Test Sequence	**Step**	**Type**	**Description**
	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

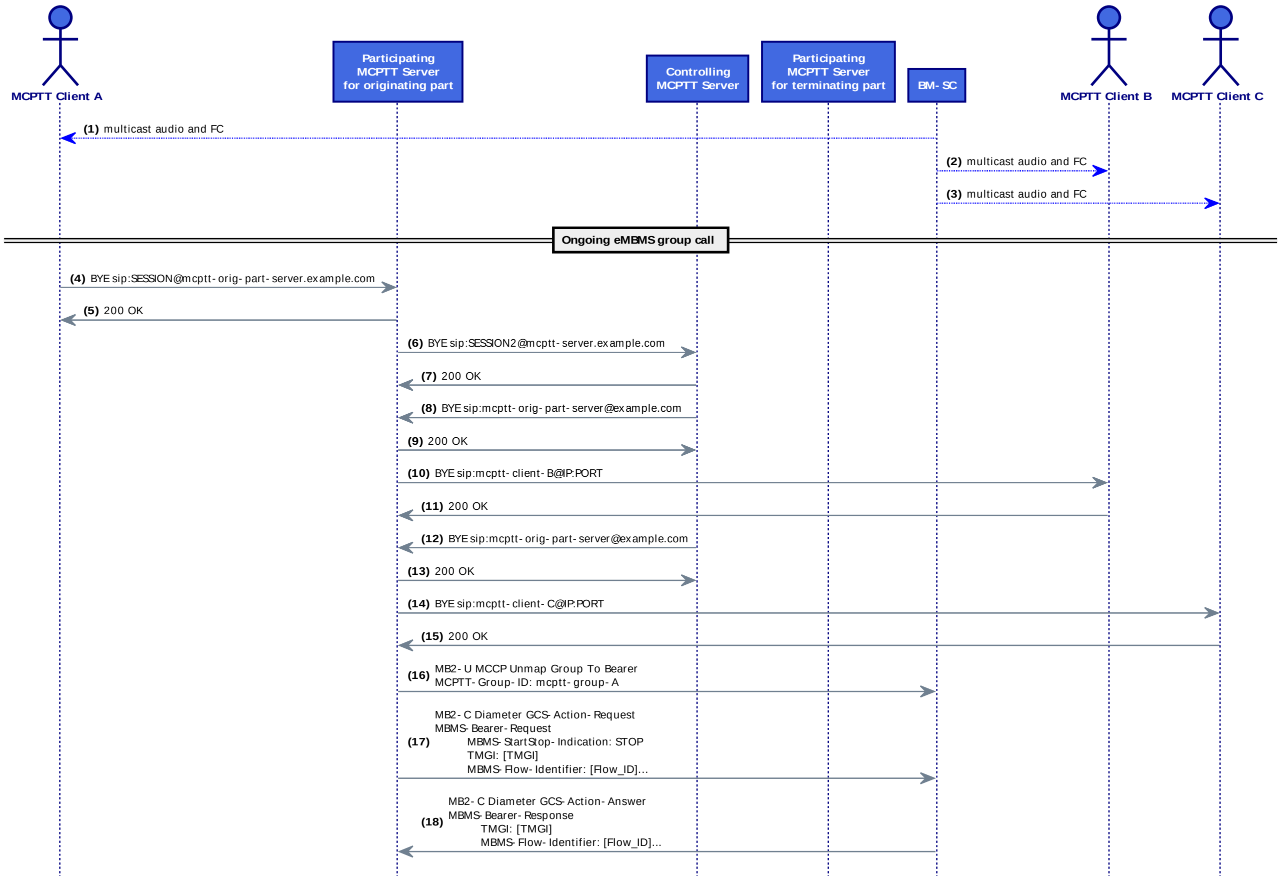

Figure 82: EMBMS/DEACTBEARER/WOTMGIDEA/01 Message Sequence

Message Details

```
[13] 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
```

Interoperability Test Description

Table 91: EMBMS/DEACTBEARER/WOTMGIDEA/01 ITD

Interoperability Test Description			
Identifier	EMBMS/DEACTBEARER/WOTMGIDEA/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • Diameter in MB2-C (see ETSI TS 129 468 [23])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC • MCPTTClient_EMBMS (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • Ongoing group call and MBMS bearer stablished		
Test Sequence	**Step**	**Type**	**Description**
	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

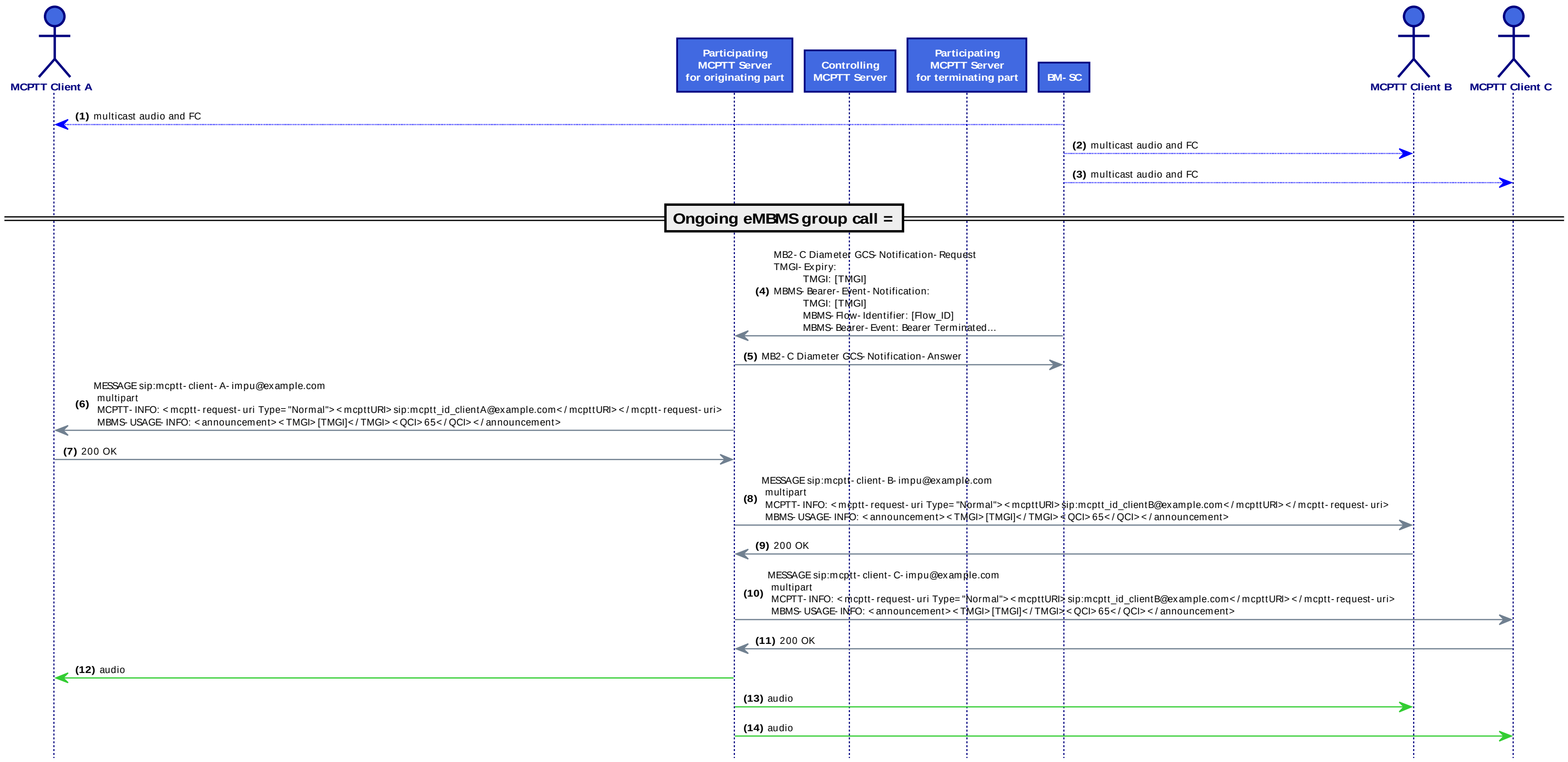

Figure 83: EMBMS/SWITCHTOUNITMGIEXP/01 Message Sequence

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			
Identifier	EMBMS/SWITCHTOUNITMGIEXP/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • Diameter in MB2-C (see ETSI TS 129 468 [23])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC • MCPTTClient_EMBMS (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • Ongoing group call and MBMS bearer stablished		
Test Sequence	**Step**	**Type**	**Description**
	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

7.6.10 Handling of a not-listening report sent by MCPTT Client [EMBMS/NOTLISTENING/01]

In this test case the specific behaviour of a MCPTT client in an on-going prearranged MCPTT group call using MBMS, moving to bad MBMS bearer radio condition will be evaluated (condition 3) out of the three possible ones considered for reporting not-listening condition).

Therefore, according to clause 14.3.3.2 in ETSI TS 124 379 [9] that specific MCPTT client will send another SIP MESSAGE to notify either iii) the intention to report that the MCPTT client is no longer listening to the MBMS subchannel in an ongoing session -in that case it shall include the MCPTT session identity in a <session-id> element- or iv) the intention to report that the MCPTT client is no longer listening to general purpose MBMS subchannel. In that case it shall include the <general-purpose> element set to "false". In both cases, a SIP message will be created with an application/vnd.3gpp.mcptt-mbms-usage-info+xml MIME body including an <mbms-listening-status> element set to "not-listening".

The participating server, according to clause 14.2.3 in ETSI TS 124 379 [9] will consider depending on the specific report type:

"*i)* *if a <session-id> element is included, shall indicate to the media plane that the MCPTT client in the sessions identified by the <session-id> elements is not listening to the MBMS subchannel;"*

"ii) *if <general-purpose> element is included with the value "false", shall indicate to the media plane that the MCPTT client is no longer listening to the general purpose MBMS bearer*."

In both cases it the participating "iii) shall interact with the media plane as specified in ETSI TS 124 380 [10]. In order to keep this test case simple the second option will be consider.

Message Sequence Diagram

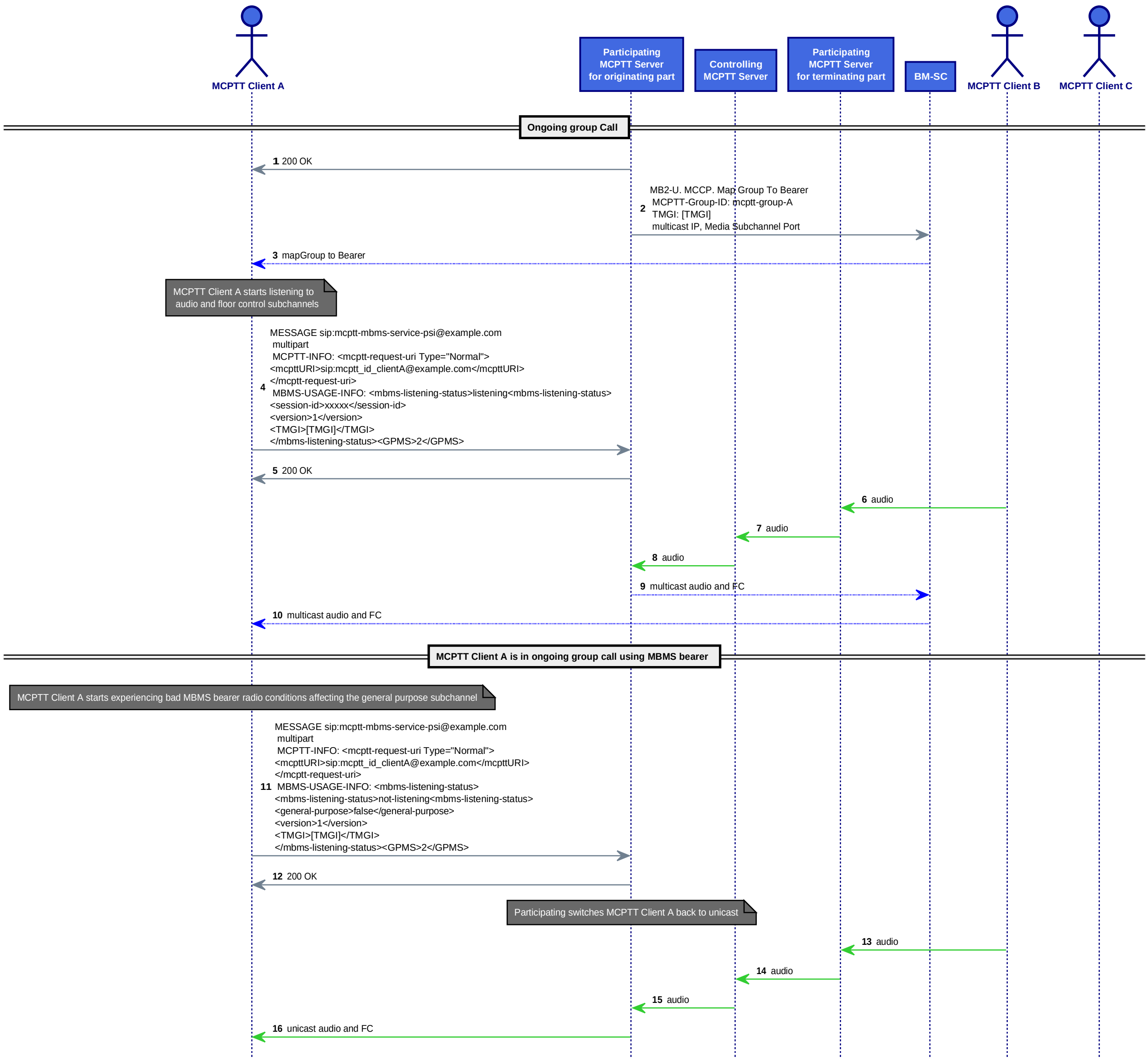

Figure 83a: EMBMS/NOTLISTENING/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 92a: EMBMS/NOTLISTENING/01 ITD

Interoperability Test Description			
Identifier	EMBMS/NOTLISTENING/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling in an MBMS MCPTT group call when UE experieces bad radio conditions.		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • Diameter in MB2-C (see ETSI TS 129 468 [23])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC • MCPTTClient_EMBMS (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • MCPTT Client already joined a prearranged group call using MBMS		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT client detects bad radio conditions affecting the general purpose subchannel
	2	stimulus	MCPTT Client sends a SIP MESSAGE including a not-listening <mbms-listening-status> and <general-purpose> to false
	3	stimulus	Participating considers the MCPTT client is no longer under MBMS coverage for any ongoing session
	4	check	MCPTT client is still on the ongoing prearranged group call but using unicast

7.6.11 Handling of a suspension-status report sent by MCPTT Client [EMBMS/SUSPENSION/01]

Similarly to [EMBMS/NOTLISTENING/01] in this test case the specific behaviour of a MCPTT client in an on-going prearranged MCPTT group call using MBMS, when it receives a near future suspension of the TMGI by the network.

More specifically, according to clause 14.3.3.1 in ETSI TS 124 379 [9] that means that in case all the following conditions are fulfilled:

"*1) the MCPTT client has reported "listening" as the most recent listening status relative to an MBMS bearer;*

2) the MCPTT client is notified that the MBMS bearer is about to be suspended by the RAN; and

3) the MCPTT client has not received a MBMS bearer announcement containing a <report-suspension> element set to "false"."

Clause 14.3.3.1 procedures will be triggered. Therefore, the MCPTT client will send a SIP MESSAGE with an application/vnd.3gpp.mcptt-mbms-usage-info+xml MIME body which:

i) shall include an <mbms-suspension-status> element set to "suspending";

ii) shall set the <number-of-reported-bearers> element to the total number of the included <suspended-TMGI> elements and <other-TMGI> elements;

iii) shall include <suspended-TMGI> element(s) set to the TMGI value for each of the MTCHs on the same MCH corresponding to the MBMS bearers about to be suspended; and

iv) may include <other-TMGI> elements, if available, corresponding to the TMGI values for other MTCHs on the same MCH as the MBMS bearers to be suspended.

The participating server, according to clause 14.2.3 in ETSI TS 124 379 [9]:

"*i) shall consider that the bearer identified by the <suspended-TMGI> element is about to be suspended and that the reduction or elimination of traffic on that bearer and/or on some of the bearers indicated in the <other-TMGI> elements can potentially avoid the suspension;*

ii) may take implementation/configuration specific immediate action for the MCPTT client that reports the suspension as well as other MCPTT clients that listen to the same bearer (e.g. moving traffic to unicast bearer(s)), reducing transmission rate, eliminating traffic, modifying pre-emption priority."

In order to keep the complexity of the test case and needed MBMS emulation mechanism to a minimum the specific immediate action to be carried out is out of the scope of this test case (moving traffic to unicast is used in the message sequence diagram for illustration purposes).

Message Sequence Diagram

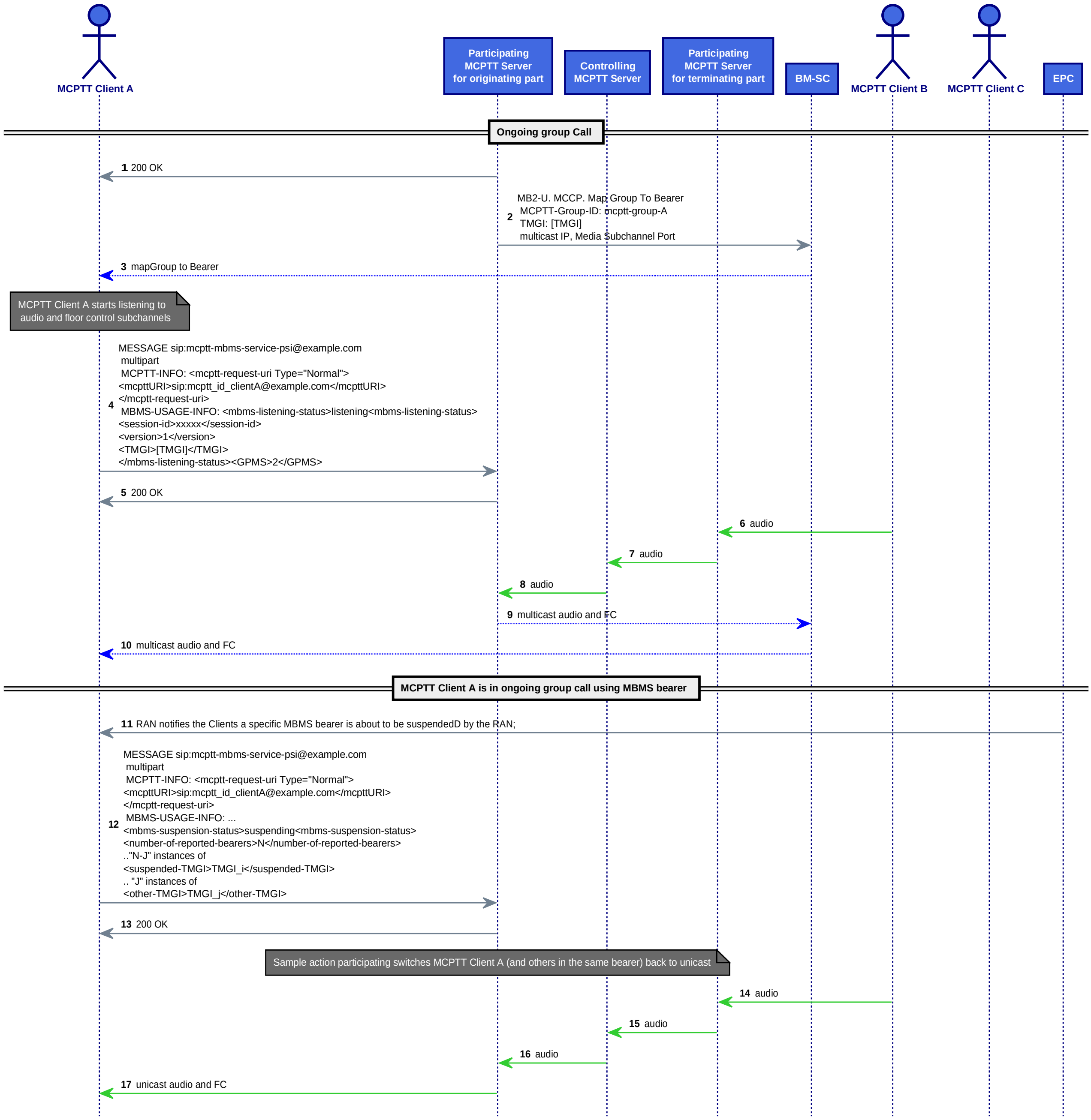

Figure 83b: EMBMS/SUSPENSION/01 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 92b: EMBMS/SUSPENSION/01 ITD

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">EMBMS/SUSPENSION/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling in an MBMS MCPTT group call when UE gets notified by the RAN of the suspension of a bearer.</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• Diameter in MB2-C (see ETSI TS 129 468 [23])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC
• MCPTTClient_EMBMS (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL
• MCPTT-Part_MCPTT-FC, MCPTT-Part_GCSE (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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
• MCPTT Client already joined a prearranged group call using MBMS</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="5">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>MCPTT client gets notified of the future suspension.</td></tr>
<tr><td>2</td><td>stimulus</td><td>MCPTT Client sends a SIP MESSAGE including a suspending <mbms-suspension-status></td></tr>
<tr><td>3</td><td>stimulus</td><td>Participating takes a corrective action</td></tr>
<tr><td>4</td><td>check</td><td>In this example sample the MCPTT client is still on the ongoing prearranged group call but using unicast</td></tr>
</table>

7.6.12 Use of dynamically established MBMS bearers in prearranged MCVideo group calls with pre-allocated TMGIs [EMBMS-MCVIDEO/ACTIVATEBEARER/WPRETMGI/01]

Similarly to in [EMBMS/ACTIVATEBEARER/WPRETMGI/01] in an on-going prearranged MCVideo group call the MCVideo 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 MBMS bearer(s) 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] including the MCVideo specific QoS-Information AVP (i.e. with the proper QCI). Upon successful activation the MCVideo Participating may send the multicast data flow to the MB2-U endpoint (unicast IP and Port in the BM-SC).

NOTE 1: The FEC considerations -that would also apply to the MCPTT case- are left FFS.

Then, after generating and distributing all the needed keying material, the Participating notifies every client in the group call using a SIP MESSAGE request as described in clause 16.3.2.2 in ETSI TS 124 281 [7] that a new MBMS bearer for MCVideo is available in the service area. This initial MBMS bearer announcement includes an mcvideo-info (with the <mcvideo-request-uri> element set to the MCVideo ID of the user), mcvideo-mbms-usage-info (with one or more <announcement> elements associated with the pre-activated MBMS bearers) and an SDP with different "m=video" and "m=audio" lines (with "c=" line set to 0.0.0.0 and port number set to 9) and a "m=application" media line to be used as the general purpose MBMS subchannel that shall include a valid multicast IP address and a valid port number.

When the MCVideo client, having received an MBMS bearer announcement, enters an MBMS service area where a general purpose MBMS is available and experiences good MBMS bearer radio condition as described in clause 16.2.3.1 condition 2 in ETSI TS 124 281 [7] it notifies the Participating server about this event with a listening-status SIP MESSAGE and and starts listening to the general purpose subchannel. After receiving these messages 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 -following the format in clause 9.3.3.3 in ETSI TS 124 581 [15]- include the MCVideo group identity and the audio/video/transmission control/FEC ports. The BM-SC is in charge of delivering these messages to the MCVideo 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 2: Handling of MUSIK download has been removed from the analysis for simplicity purpose (refer to SEC section).

Message Sequence Diagram

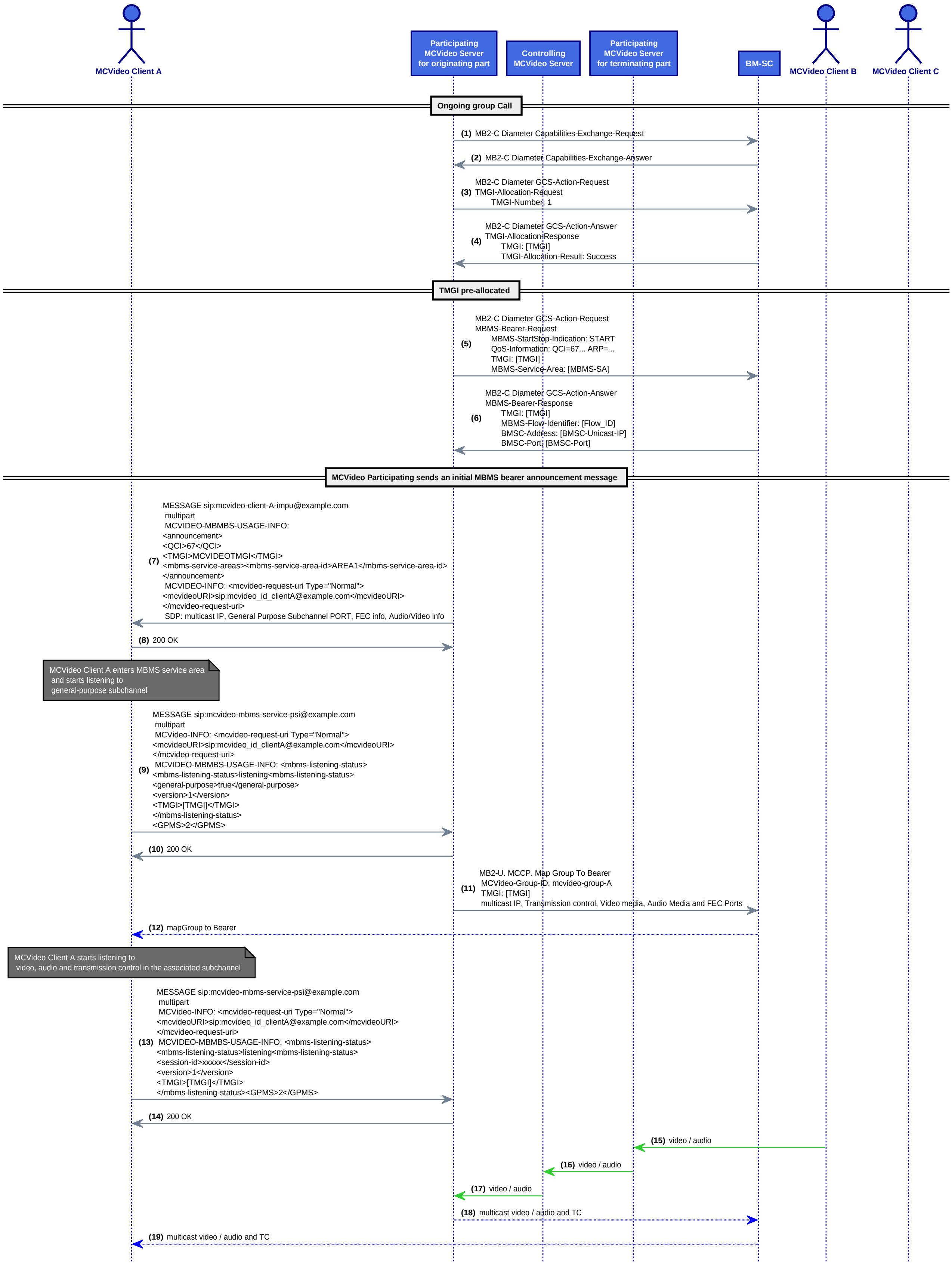

Figure 83c: EMBMS-MCVIDEO/ACTIVATEBEARER/WPRETMGI/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 92c: EMBMS-MCVIDEO/ACTIVATEBEARER/WPRETMGI/01 ITD

Interoperability Test Description			
Identifier	EMBMS-MCVIDEO/ACTIVATEBEARER/WPRETMGI/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_EMBMS • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcvideo_id - Ongoing prearranged group call		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCVideo Participating requests the allocation of a TMGI
	2	stimulus	Upon successful TMGI allocation MCVideo participating requests the activation of a MBMS bearer
	3	stimulus	Upon successful MBMS bearer activation MCVideo 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 Audio/Video/Transmission control over multicast
	6	check	Users successfully listening to multicast group call

7.6.13 Use of dynamically established MBMS bearers in prearranged MCVideo group calls without pre-allocated TMGIs [EMBMS-MCVIDEO/ACTIVATEBEARER/WOPRETMGI/01]

The procedure is equivalent to that in clause 7.6.12 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

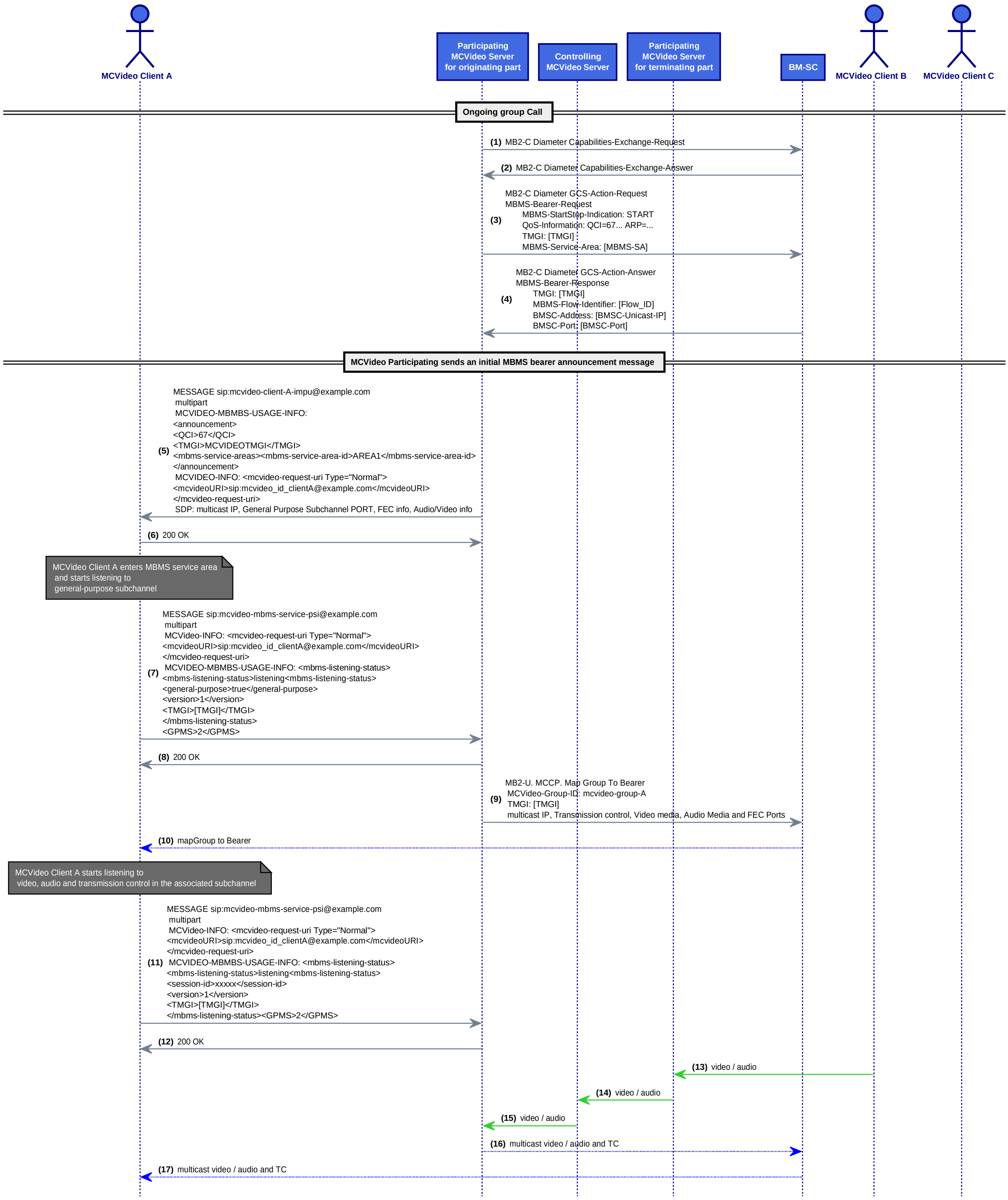

Figure 83d: EMBMS-MCVIDEO/ACTIVATEBEARER/WOPRETMGI/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 92d: EMBMS-MCVIDEO/ACTIVATEBEARER/WOPRETMGI/01 ITD

Interoperability Test Description			
Identifier	EMBMS-MCVIDEO/ACTIVATEBEARER/WOPRETMGI/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_EMBMS • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcvideo_id - Ongoing prearranged group call		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCVideo Participating requests the activation of a MBMS bearer with no TMGI
	2	stimulus	Upon successful MBMS bearer activation MCVideo 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 Video/Audio/Transmission Control packets over multicast
	5	check	Users successfully listening to multicast group call

7.6.14 Use of pre-established MBMS bearers in prearranged MCVideo group calls with pre-allocated TMGIs [EMBMS-MCVIDEO/PREBEARER/WPRETMGI/01]

This test case is equivalent to that in clause 7.6.12 but all the MBMS bearer activation and signalling procedures is carried out before the MCVideo Group Call setup is carried out.

Following high level description in Stage 2 ETSI TS 123 281 [2], clause 7.10.2 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

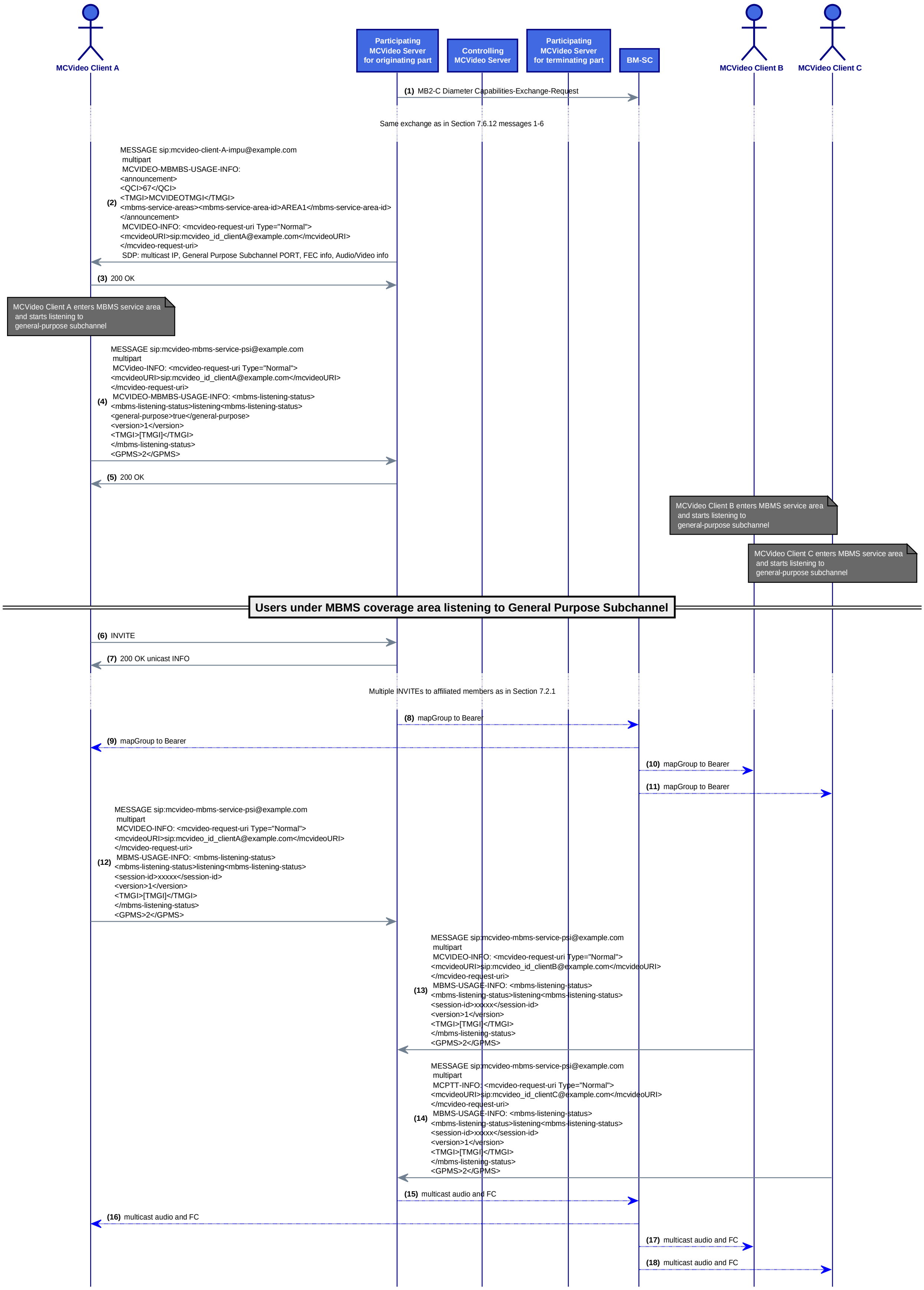

Figure 83e: EMBMS-MCVIDEO/PREBEARER/WPRETMGI/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 92e: EMBMS-MCVIDEO/PREBEARER/WPRETMGI/01 ITD

Interoperability Test Description			
Identifier	EMBMS-MCVIDEO/PREBEARER/WPRETMGI/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_EMBMS • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcvideo_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCVideo Participating requests the allocation of a TMGI and activation of MBMS bearer following procedures in clause 7.6.12
	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 MCVideo participating starts sending video/audio/TC over MBMS
	7	check	Users successfully listening to multicast group call

7.6.15 Use of pre-established MBMS bearers in prearranged MCVideo group calls without pre-allocated TMGIs [EMBMS-MCVIDEO/PREBEARER/WOPRETMGI/01]

This test case is equivalent to that in clause 7.6.13 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 again the high level description in Stage 2 ETSI TS 123 281 [3], clause 7.10.2 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

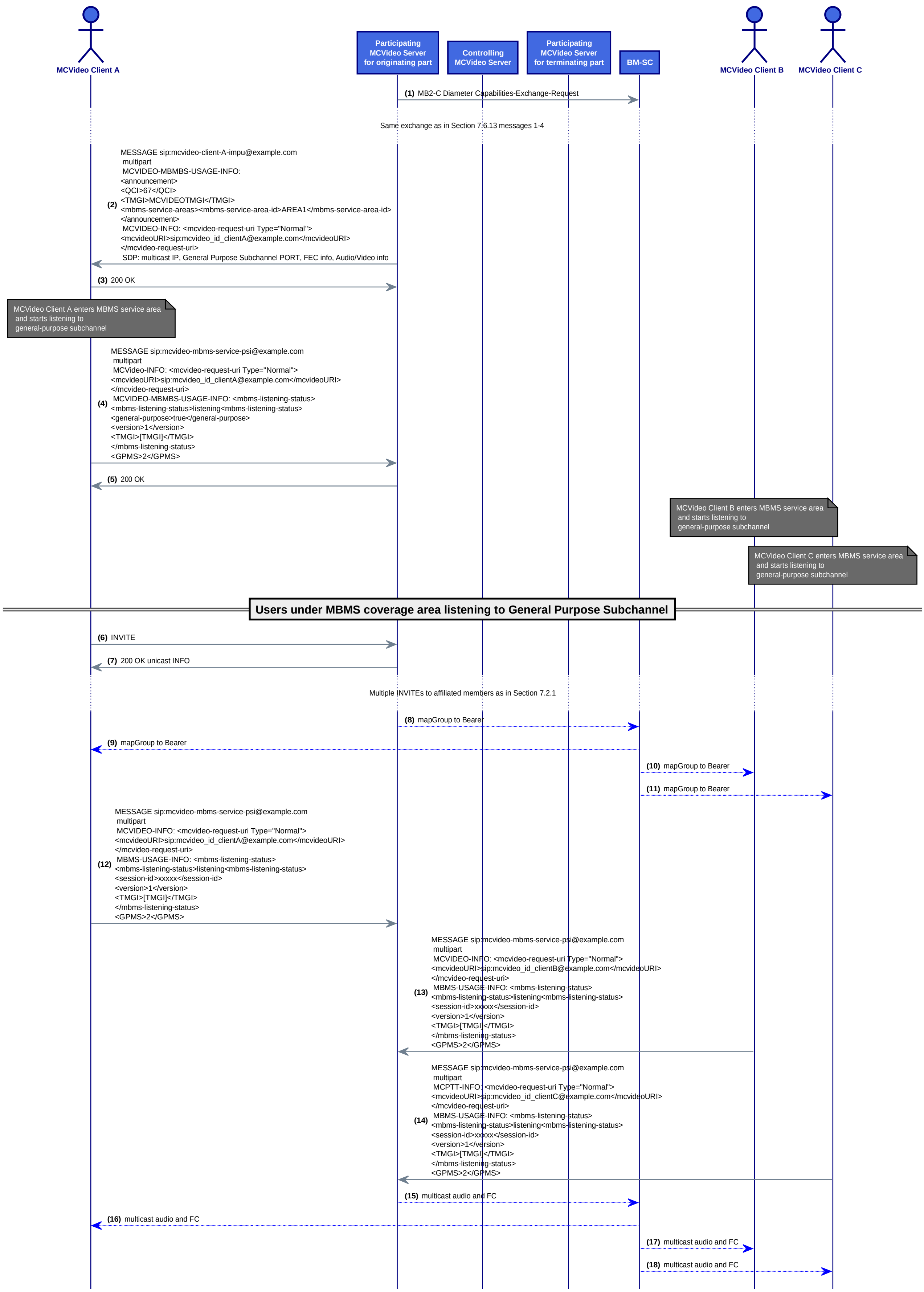

Figure 83f: EMBMS-MCVIDEO/PREBEARER/WOPRETMGI/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 92f: EMBMS-MCVIDEO/PREBEARER/WOPRETMGI/01 ITD

Interoperability Test Description			
Identifier	EMBMS-MCVIDEO/PREBEARER/WOPRETMGI/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_EMBMS • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcvideo_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT Participating requests the activation of MBMS bearer following procedures in clause 7.6.13
	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 video/audio/TC over MBMS
	7	check	Users successfully listening to multicast group call

7.6.16 Modification of MBMS bearers upon reception of emergency upgrade request in an MCVideo group call [EMBMS-MCVIDEO/MODIFYBEARER/01]

This test covers the upgrade to emergency state of an on-going prearranged MCVideo 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 7.6.12, 7.6.13, 7.6.14 or 7.6.15 of the present document. The MCVideo 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 re-INVITE request the MCVideo Client includes a new Resource-Priority header set to a high priority value, which corresponds with the emergency state. The MCVideo Participating server shall set the Allocation-Retention-Priority AVP of the MBMS-Bearer-Request accordingly.

Message Sequence Diagram

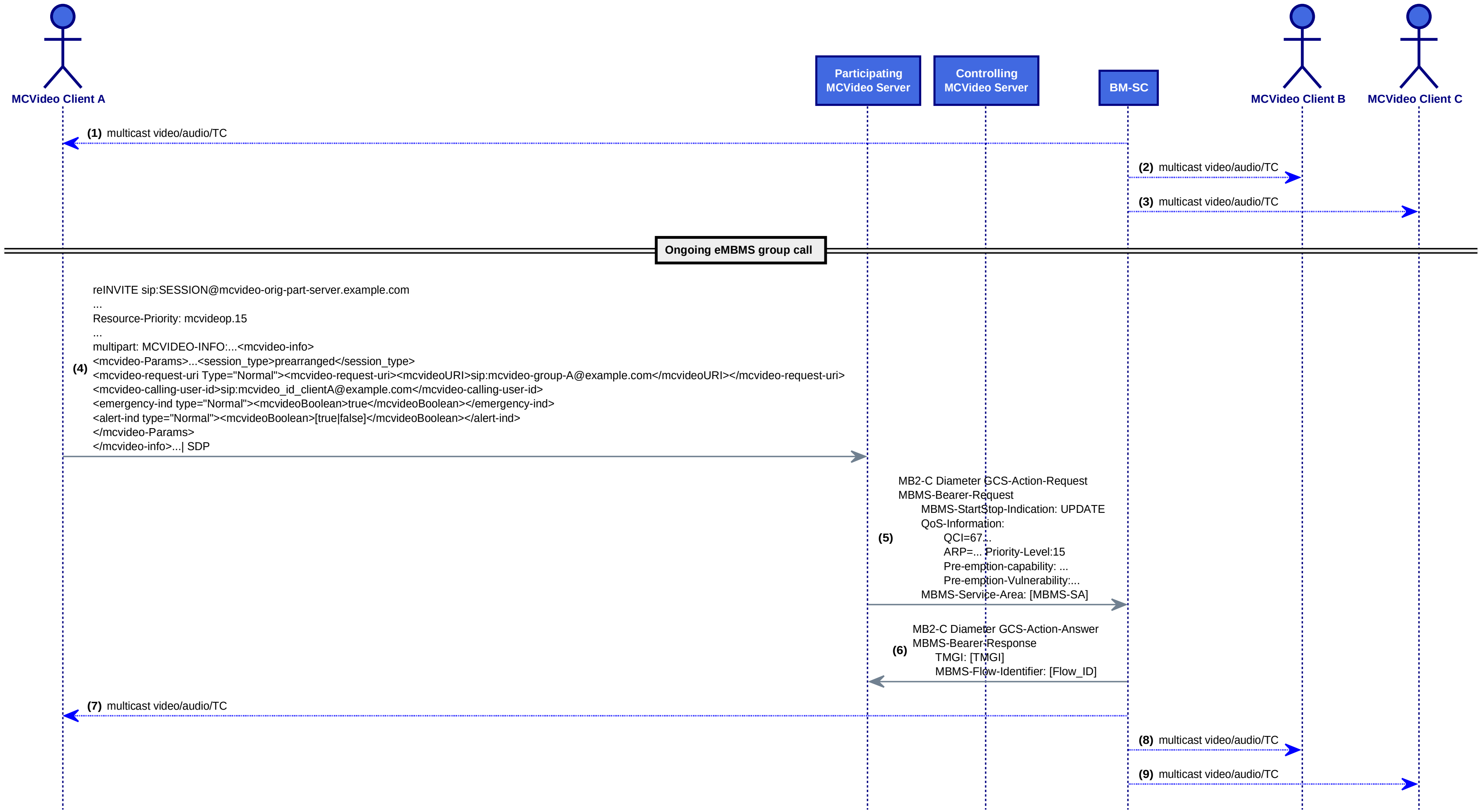

Figure 83g: EMBMS-MCVIDEO/MODIFYBEARER/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 92g: EMBMS-MCVIDEO/MODIFYBEARER/01 ITD

Interoperability Test Description			
Identifier	EMBMS-MCVIDEO/MODIFYBEARER/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_EMBMS • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcvideo_id • Ongoing MCVideo group call and MBMS bearer stablished		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCVideo User re-INVITEs 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

7.6.17 Deactivation of MBMS bearers after termination of a prearranged MCVideo group call with TMGI deallocation [EMBMS-MCVIDEO/DEACTBEARER/WTMGIDEA/01]

NOTE: The procedure is the same as for clause 7.6.7 but to be triggered for MCVideo group calls.

When the Participating MCVideo server receives a BYE request for the last user left in an on-going prearranged MCVideo 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 MCPVideo 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 MCVideo session and also the deallocation of the associated 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 MCVideo server shall also deallocate the TMGI which was allocated for the MCVideo session. The Participating MCVideo 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

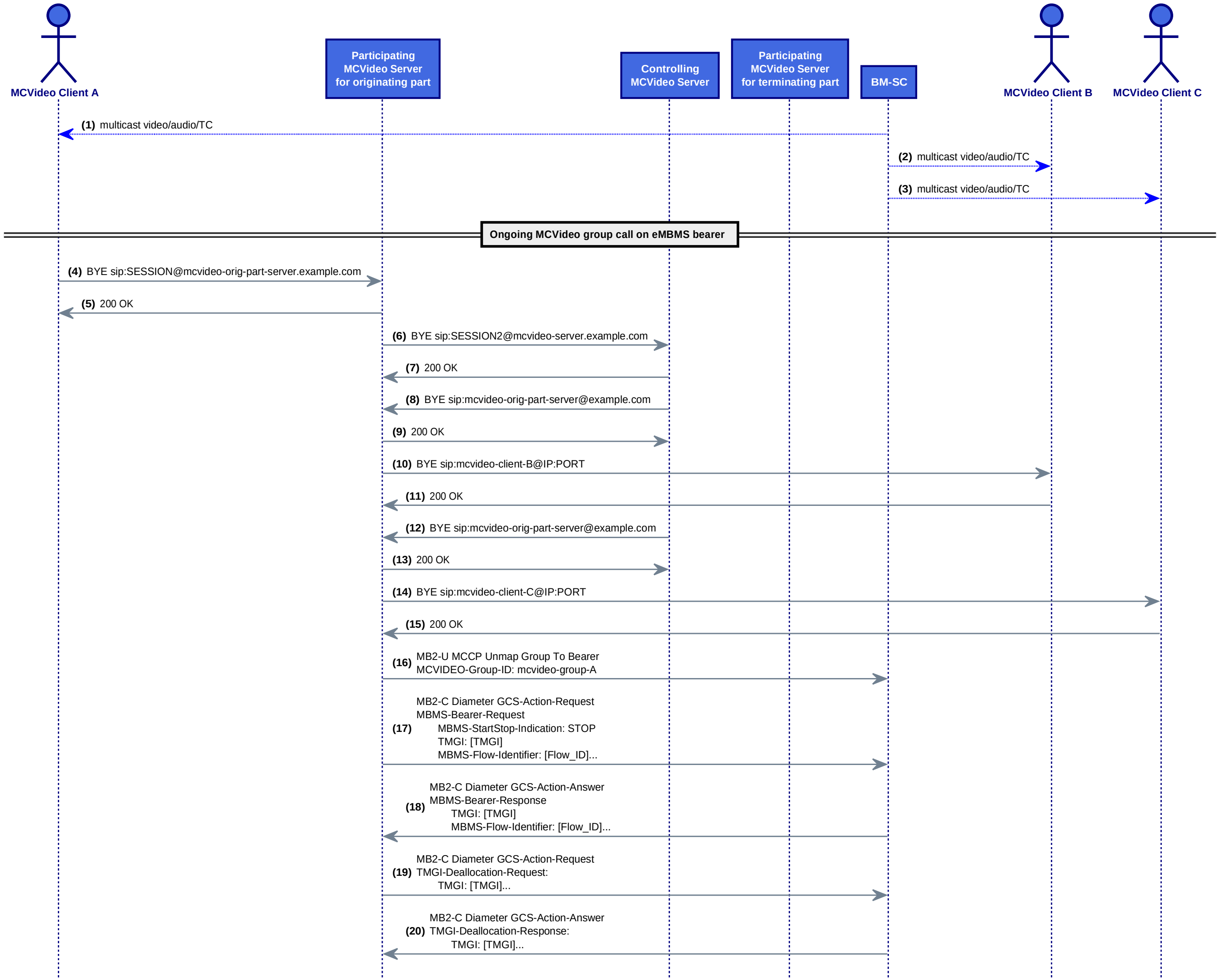

Figure 83h: EMBMS-MCVIDEO/DEACTBEARER/WTMGIDEA/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 92h: EMBMS-MCVIDEO/DEACTBEARER/WTMGIDEA/01 ITD

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">EMBMS-MCVIDEO/DEACTBEARER/WTMGIDEA/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">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 used for an MCVideo group call</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])
• TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB
• MCVideo-Client_EMBMS
• MCVideo-Client_H264, MCVideo-Client_AFFIL
• MCVideoClient_ONN-MCVideo-TC (clause 6.2)
• MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL
• MCVideo-Part_ONN-MCVideo-TC (clause 6.7)
• MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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
• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcvideo_id
• Ongoing MCVideo group call and MBMS bearer stablished</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td></td><td>1</td><td>stimulus</td><td>Participating receives the BYE from the last user therefore group call is terminated</td></tr>
<tr><td></td><td>2</td><td>stimulus</td><td>Participating sends an Unmap Group to Bearer request over MB2-U channel</td></tr>
<tr><td></td><td>3</td><td>stimulus</td><td>Participating sends a GCS-Action-Request with the MBMS-StartStop-Indication AVP set to "STOP"</td></tr>
<tr><td></td><td>4</td><td>stimulus</td><td>Participating request the deallocation of the associated TMGI</td></tr>
<tr><td></td><td>5</td><td>check</td><td>MBMS bearer and TMGI deactivated/deallocated</td></tr>
</table>

7.6.18 Deactivation of MBMS bearers after termination of a prearranged MCVideo group call without TMGI deallocation [EMBMS-MCVIDEO/DEACTBEARER/WOTMGIDEA/01]

The procedure is equivalent to that in clause 7.6.17 but no TMGI is deallocated after MCPTT session termination.

Message Sequence Diagram

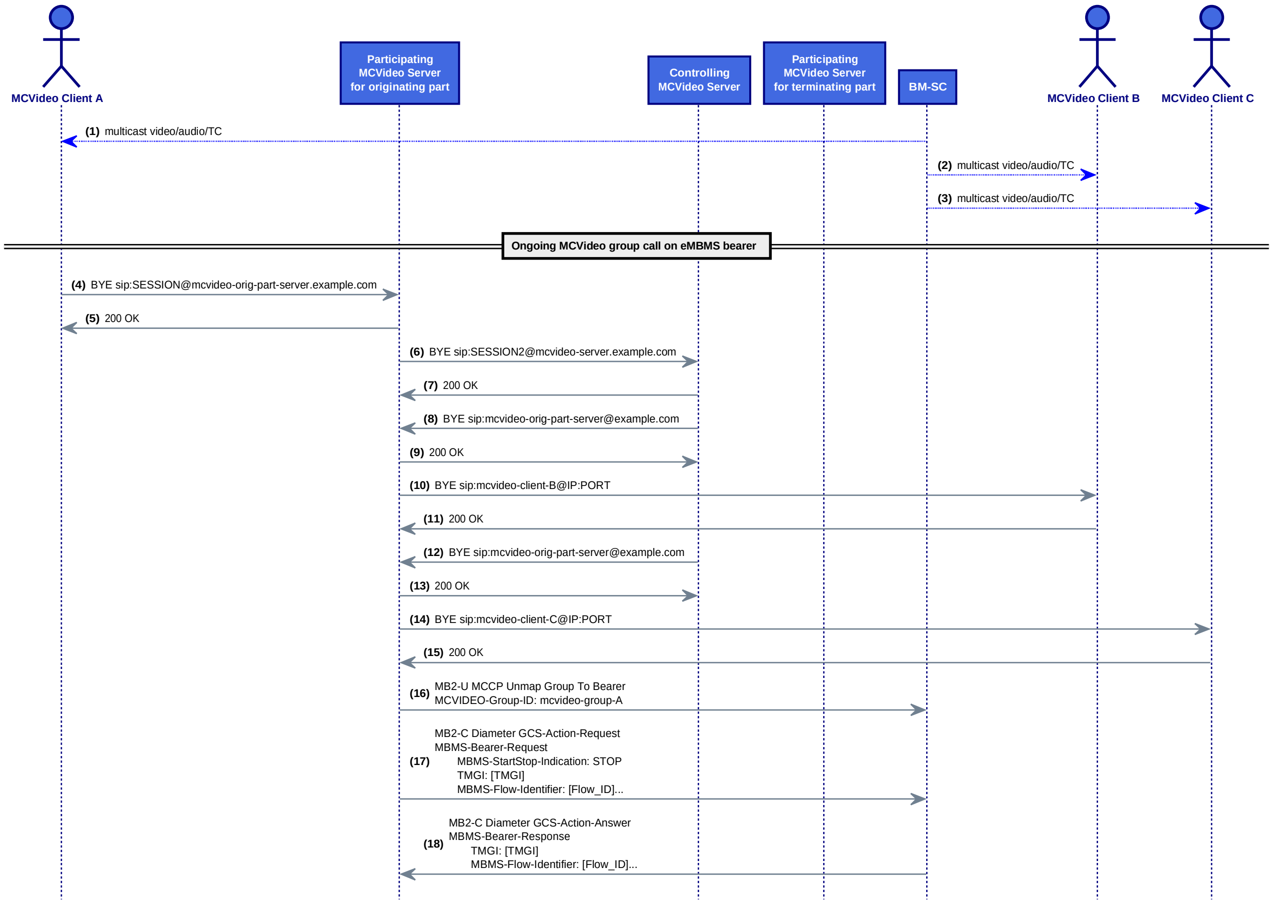

Figure 83i: EMBMS-MCVIDEO/DEACTBEARER/WOTMGIDEA/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 92i: EMBMS-MCVIDEO/DEACTBEARER/WOTMGIDEA/01 ITD

Interoperability Test Description			
Identifier	EMBMS-MCVIDEO/DEACTBEARER/WOTMGIDEA/01		
Test Objective	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 used for an MCVideo group call without deallocating TMGIs		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_EMBMS • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • Ongoing group call and MBMS bearer stablished		
Test Sequence	**Step**	**Type**	**Description**
	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

7.6.19 Switching to unicast bearer after TMGI expiration in an MCVideo call [EMBMS-MCVIDEO/SWITCHTOUNITMGIEXP/01]

If a TMGI expires during an on-going MCVideo group call which uses eMBMS bearers, the BM-SC shall notify the MCVideo Participating server that the MBMS is no longer available, so that the MCVideo server can continue with the MCVideo 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

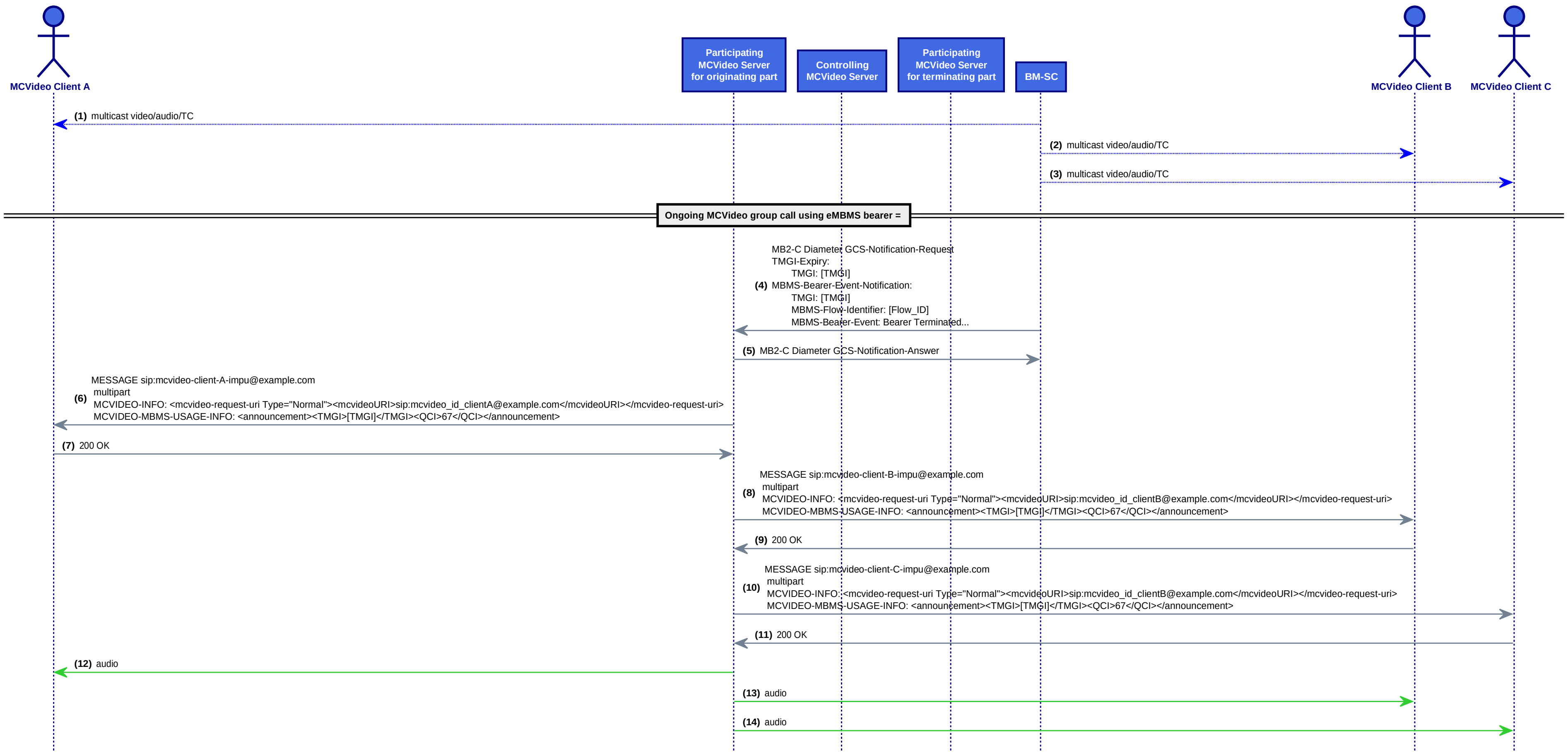

Figure 83j: EMBMS-MCVIDEO/SWITCHTOUNITMGIEXP/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 92j: EMBMS-MCVIDEO/SWITCHTOUNITMGIEXP/01 ITD

Interoperability Test Description			
Identifier	EMBMS-MCVIDEO/SWITCHTOUNITMGIEXP/01		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_EMBMS • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcvideo_id • Ongoing MCVideo group call and MBMS bearer stablished		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	BM-SC notifies the Participating about TMGI expiration
	2	stimulus	MCVideo participating notifies "n" users in the group call previously using eMBMS about the expiration
	3	check	MCVideo group call continues using multi-unicast flows

7.6.20 Handling of a not-listening report sent by MCVideo Client [EMBMS-MCVIDEO/NOTLISTENING/01]

In this test case the specific behaviour of a MCVideo client in an on-going prearranged MCVideo group call using MBMS, moving to bad MBMS bearer radio condition will be evaluated (condition 3) out of the three possible ones considered for reporting not-listening condition).

Therefore, according to clause 16.2.3.1 in ETSI TS 124 281 [7], an MVideo will send another SIP MESSAGE to notify either iii) the intention to report that the MCVideo client is no longer listening to the MBMS subchannel in an ongoing session -in that case it shall include the MCVideo session identity in a <session-id> element- or iv) the intention to report that the MCVideo client is no longer listening to general purpose MBMS subchannel. In that case it shall include the <general-purpose> element set to "false". In both cases, a SIP message will be created with an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body including an <mbms-listening-status> element set to "not-listening".

The participating server, according to clause 16.3.3 in ETSI TS 124 281 [7], will consider depending on the specific report type:

i) if <session-identifier> elements are included, shall indicate to the media plane that the MCVideo client in the sessions identified by the <session-identifier> elements is not listening to the MBMS subchannel;

ii) if <general-purpose> element is included with the value "false", shall indicate to the media plane that the MCVideo client is no longer listening to the general purpose MBMS bearer

In both cases the participating "*iii) shall interact with the media plane as specified in ETSI TS 124 581 [15]*". In order to keep this test case simple the second option will be considered.

Message Sequence Diagram

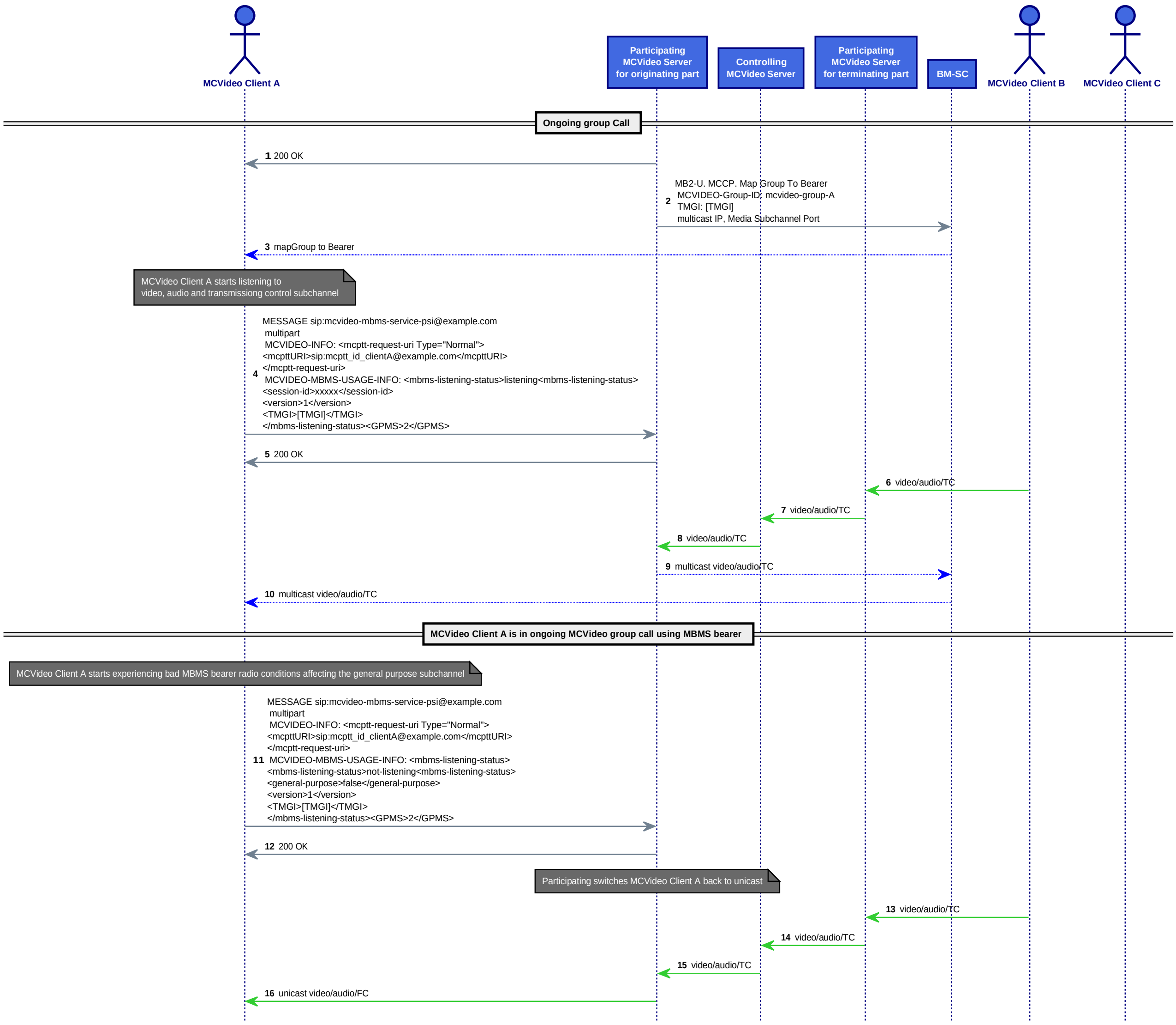

Figure 83k: EMBMS-MCVIDEO/NOTLISTENING/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 92k: EMBMS-MCVIDEO/NOTLISTENING/01 ITD

Interoperability Test Description			
Identifier	EMBMS-MCVIDEO/NOTLISTENING/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling in an MBMS MCVideo group call when UE experiences bad radio conditions		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_EMBMS • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • MCVideo Client already joined a prearranged MCvideo group call using MBMS		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCVideo client detects bad radio conditions affecting the general purpose subchannel
	2	stimulus	MCVideo Client sends a SIP MESSAGE including a not-listening <mbms-listening-status> and <general-purpose> to false
	3	stimulus	MCvideo participating considers the MCVideo client is no longer under MBMS coverage for any ongoing session
	4	check	MCVideo client is still on the ongoing prearranged group call but using unicast

7.6.21 Handling of a suspension-status report sent by MCVideo Client [EMBMS-MCVIDEO/SUSPENSION/01]

Similarly to [EMBMS-MCVIDEO/NOTLISTENING/01] in this test case the specific behaviour of a MCVideo client in an on-going prearranged MCVideo group call using MBMS, when it receives a near future suspension of the TMGI by the network.

More specifically, according to clause 16.2.3.1 in ETSI TS 124 281 [7] that means that in case all the following conditions are fulfilled:

set to "false",

"*1) the MCVideo client has reported "listening" as the most recent listening status relative to an MBMS bearer;*

2) the MCVideo client is notified that the MBMS bearer is about to be suspended by the RAN; and

3) the MCVideo client has not received a MBMS bearer announcement containing a <report-suspension> element set to "false"."

Clause 16.2.3.2 procedures will be triggered. Therefore, the MCVideo client will send a SIP MESSAGE with an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body which:

i) shall include an <mbms-suspension-status> element set to "suspending";

ii) shall set the <number-of-reported-bearers> element to the total number of the included <suspended-TMGI> elements and <other-TMGI> elements;

iii) shall include <suspended-TMGI> element(s) set to the TMGI value for each of the MTCHs on the same MCH corresponding to the MBMS bearers about to be suspended; and

iv) may include <other-TMGI> elements, if available, corresponding to the TMGI values for other MTCHs on the same MCH as the MBMS bearers to be suspended.

The MCVideo participating server, according to clause 16.3.3 in ETSI TS 124 281 [7]:

"*i) shall consider that the bearer identified by the <suspended-TMGI> element is about to be suspended and that the reduction or elimination of traffic on that bearer and/or on some of the bearers indicated in the <other-TMGI> elements can potentially avoid the suspension;*

ii) may take implementation/configuration specific immediate action for the MCVideo client that reports the suspension as well as other MCVideo clients that listen to the same bearer (e.g. moving traffic to unicast bearer(s)), reducing transmission rate, eliminating traffic, modifying pre-emption priority."

In order to keep the complexity of the test case and needed MBMS emulation mechanism to a minimum the specific immediate action to be carried out is out of the scope of this test case (moving traffic to unicast is used in the message sequence diagram for illustration purposes).

Message Sequence Diagram

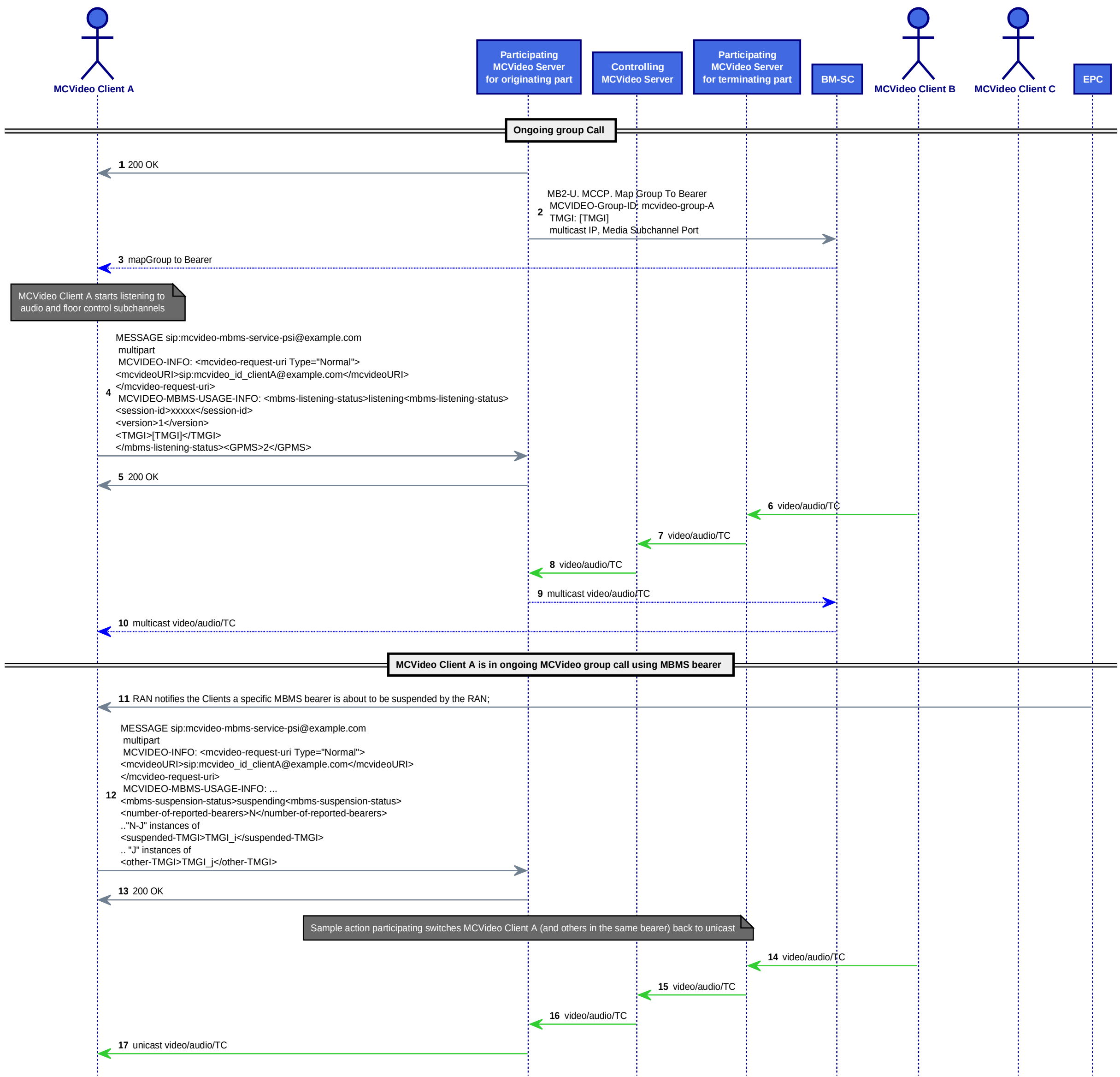

Figure 83l: EMBMS-MCVIDEO/SUSPENSION/01 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 92l: EMBMS-MCVIDEO/SUSPENSION/01 ITD

Interoperability Test Description			
Identifier	EMBMS-MCVIDEO/SUSPENSION/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling in an MBMS MCVideo group call when UE gets notified by the RAN of the suspension of a bearer		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMRWB • MCVideo-Client_EMBMS • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • MCVideo Client already joined a prearranged group call using MBMS		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCVideo client gets notified of the future suspension.
	2	stimulus	MCVideo Client sends a SIP MESSAGE including a suspending <mbms-suspension-status>
	3	stimulus	Participating takes a corrective action
	4	check	In this example the MCVideo client is still on the ongoing prearranged group call but using unicast

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

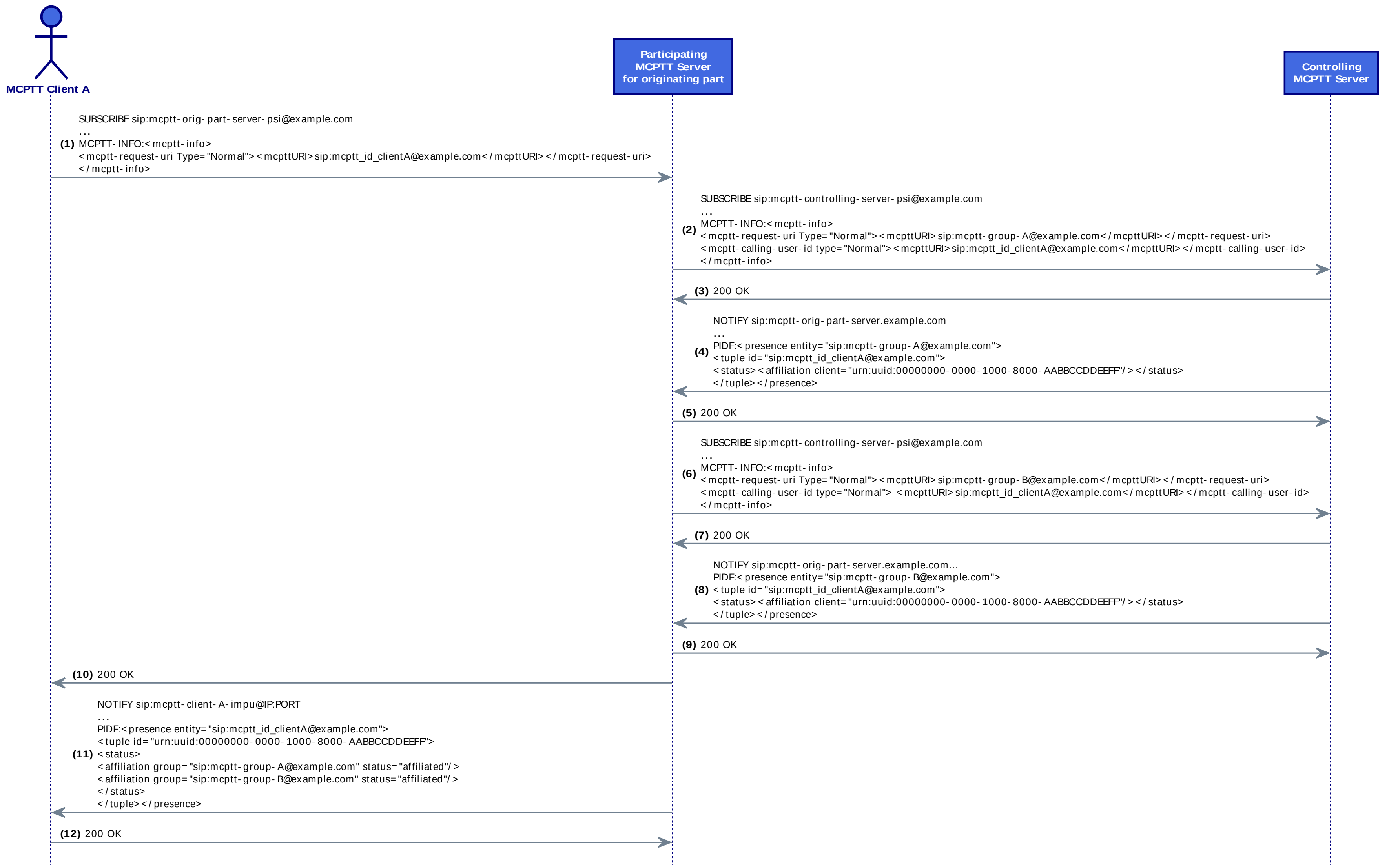

Figure 84: AFFIL/DET/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 93: AFFIL/DET/01 ITD

Interoperability Test Description			
Identifier	AFFIL/DET/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and proper affiliation information retrieval		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL (clause 6.2) • MCPTT-Part_AFFIL (clause 6.5) • MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	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

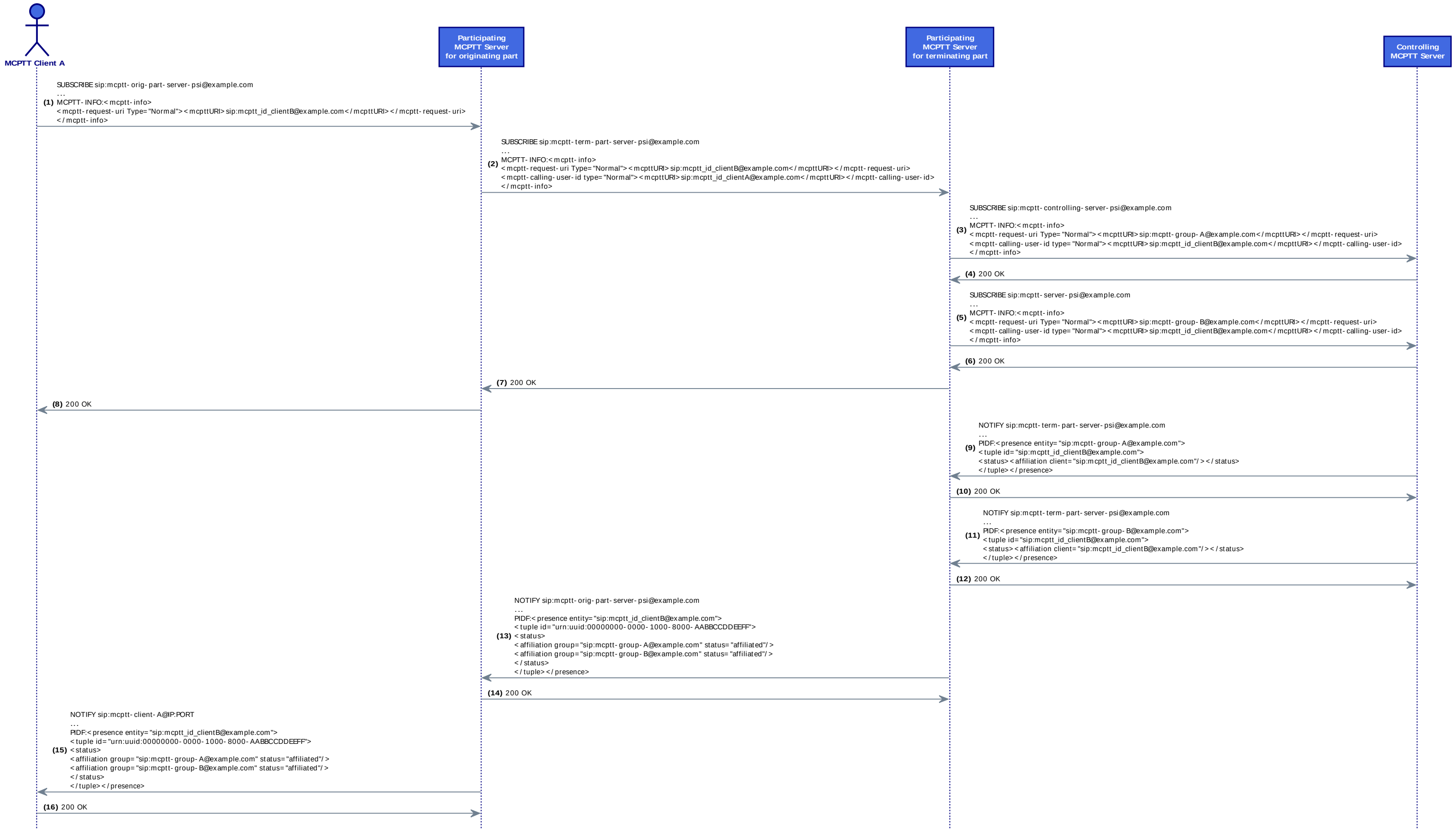

Figure 85: AFFIL/DET/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 94: AFFIL/DET/02 ITD

Interoperability Test Description			
Identifier	AFFIL/DET/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and proper affiliation information retrieval		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL (clause 6.2) • MCPTT-Part_AFFIL (clause 6.5) • MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	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/pidf+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

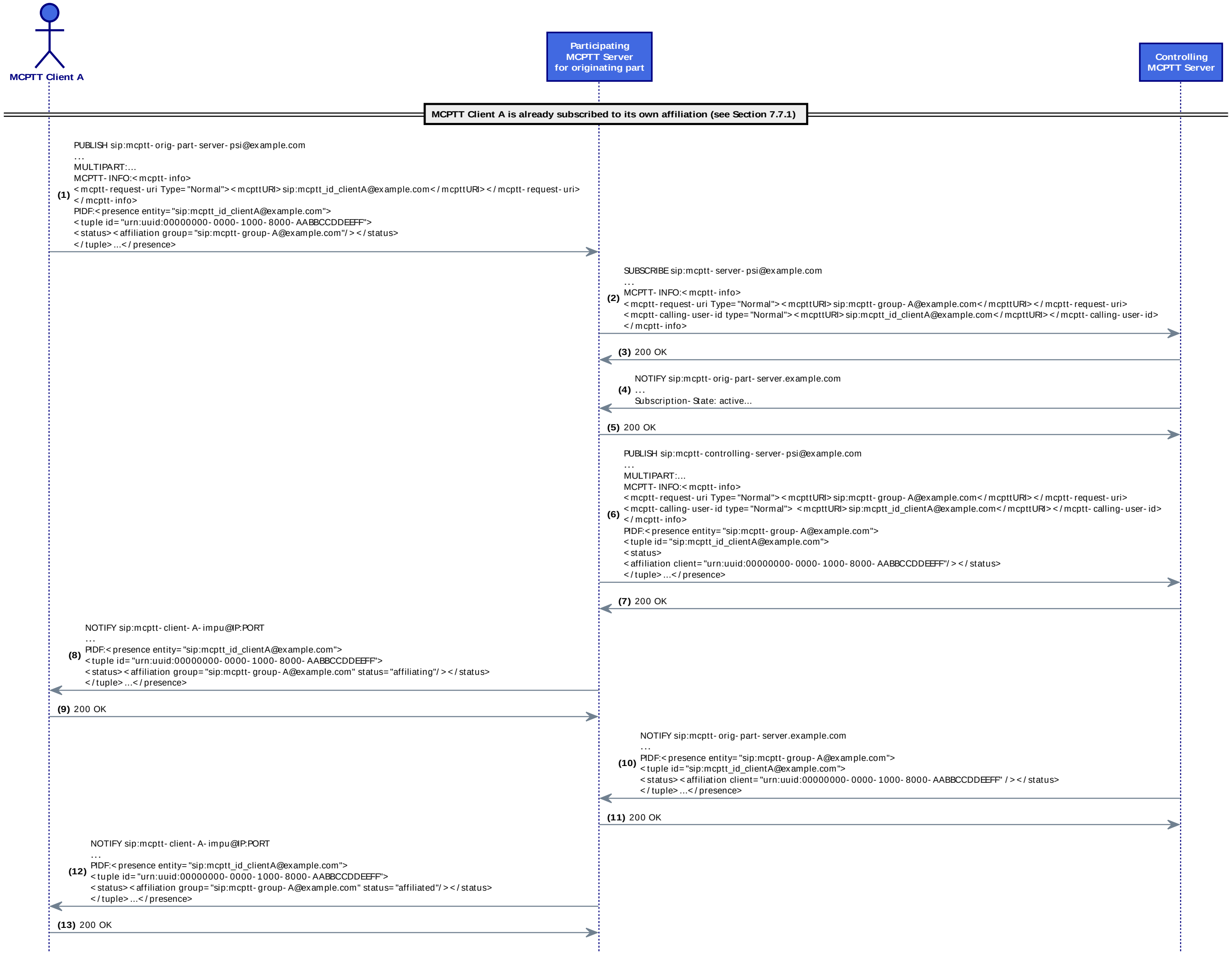

Figure 86: AFFIL/CHANGE/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 95: AFFIL/CHANGE/01 ITD

Interoperability Test Description			
Identifier	AFFIL/CHANGE/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and affiliation status properly changed		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL (clause 6.2) • MCPTT-Part_AFFIL (clause 6.5) • MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	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

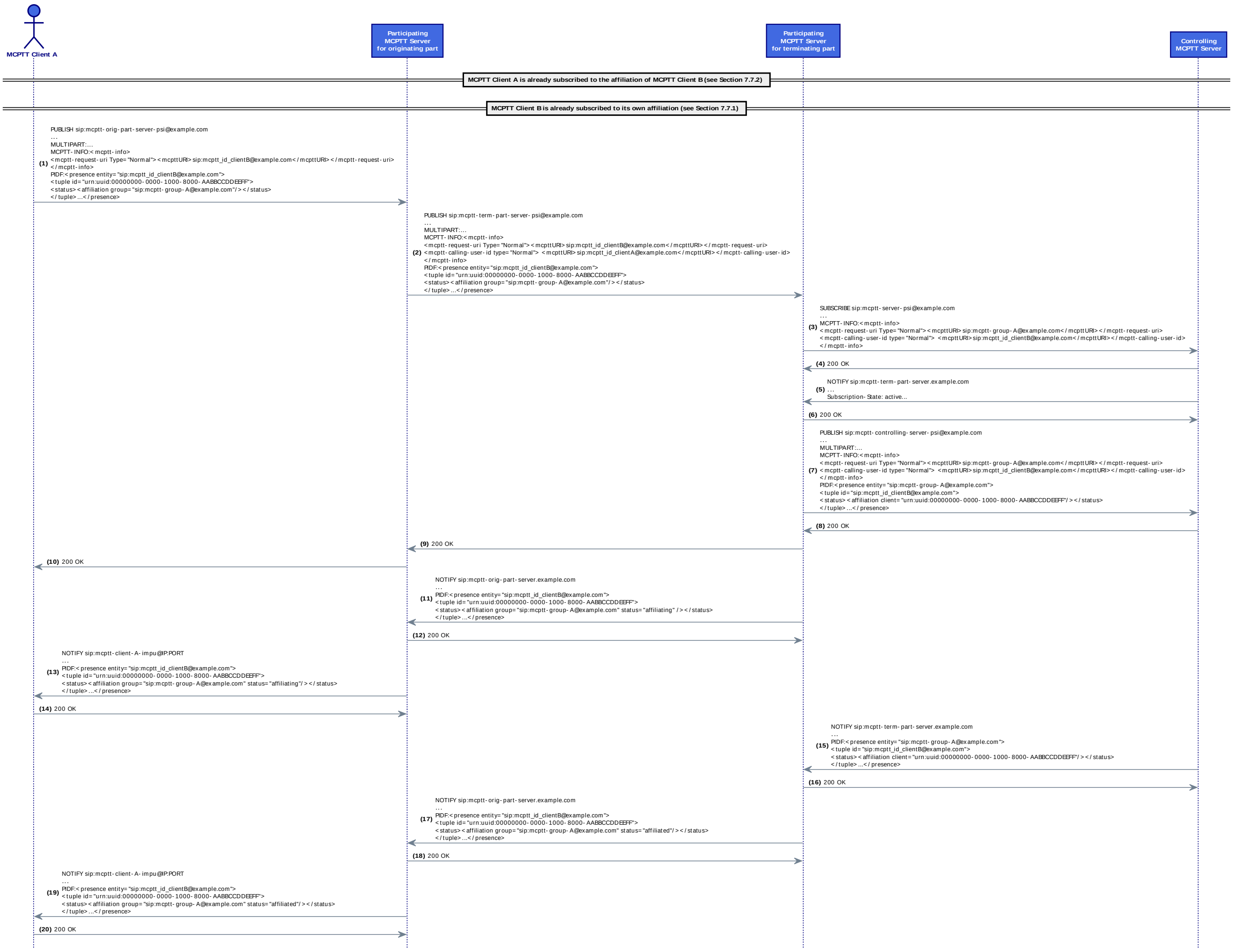

Figure 87: AFFIL/CHANGE/02 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 96: AFFIL/CHANGE/02 ITD

Interoperability Test Description			
Identifier	AFFIL/CHANGE/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and proper affiliation information change		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL (clause 6.2) • MCPTT-Part_AFFIL (clause 6.5) • MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	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

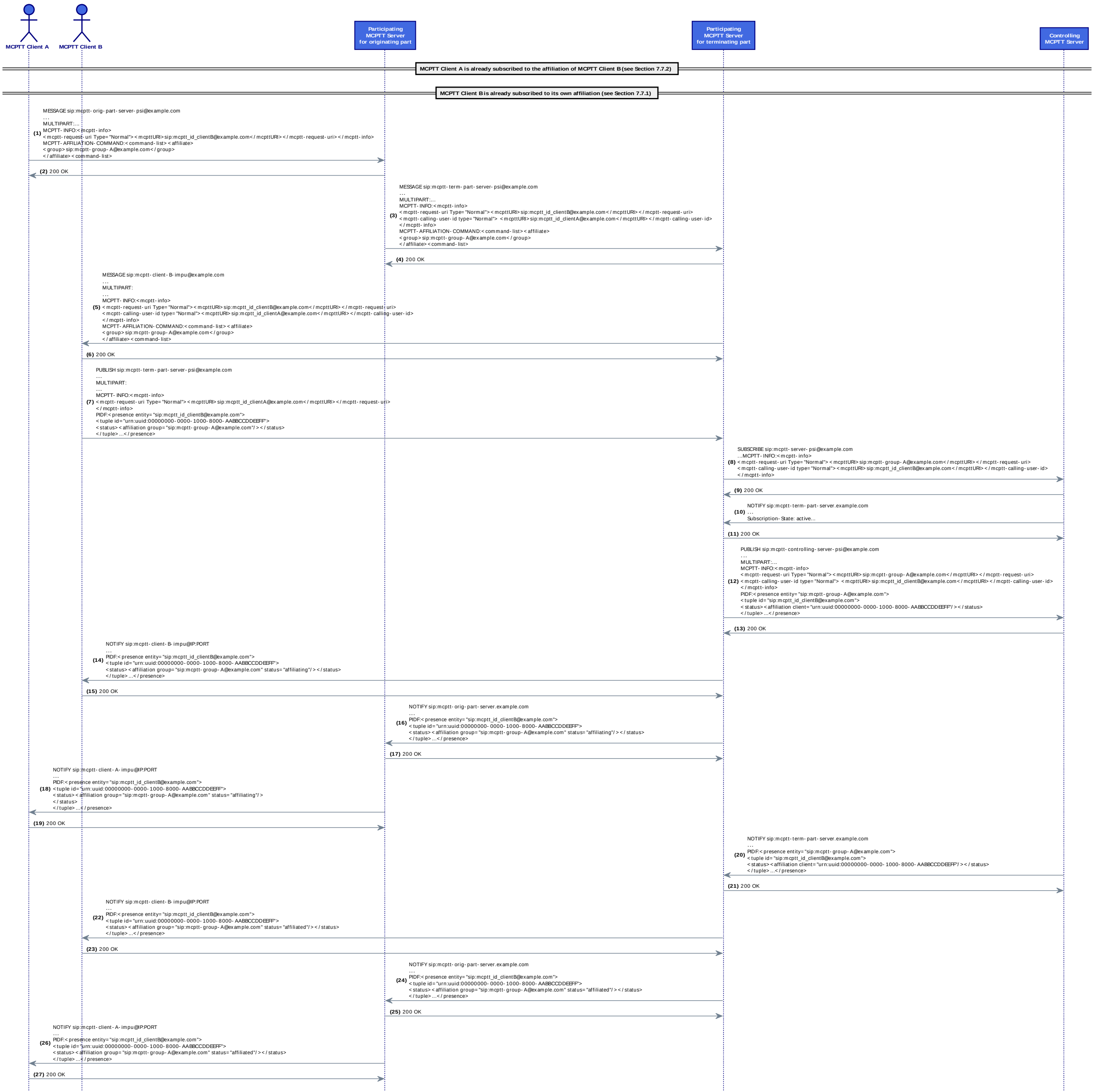

Figure 88: AFFIL/CHANGE/03 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 97: AFFIL/CHANGE/03 ITD

Interoperability Test Description			
Identifier	AFFIL/CHANGE/03		
Test Objective	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		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL (clause 6.2) • MCPTT-Part_AFFIL (clause 6.5) • MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	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

7.7.6 Affiliation change triggered by a functional-alias activation criteria [AFFIL/CHANGE/04]

Clause 9.2.1.7 in ETSI TS 124 379 [9] defines the so-called rules based affiliation status change procedure. More specifically, rules based affiliation is controlled by the elements <RulesForAffiliation> or <RulesForDeAffiliation> of the MCPTT user profile document identified by the MCPTT ID of the MCPTT user (see the MCPTT user profile document in ETSI TS 124 484 [14]).

This test case describes how the affiliation status change procedure (as defined in clause 9.2.1.2) is initiated when a functional alias criteria based rule is fulfilled. Therefore, according to the definition of the User profile in clause 8.3.2.7 of ETSI TS 124 484 [14], the <RulesForAffiliation> element within the <anyExt> element of the <entry> element within the <MCPTTGroupInfo> list element of the <OnNetwork> element indicates that "…upon a change in functional alias activation status to the MCPTT client to evaluate the rules. "If for any rule … any functional alias criteria is fulfilled the MCPTT client triggers the group affiliation".

More specifically, the element <ListOfActiveFunctionalAliasCriteria> contains one or more <entry> elements containing the <anyExt> element set to the functional alias whose activation or deactivation trigger evaluation of the rules. Therefore, upon successful activation of such functional alias the MCPTT client will activate the affiliation to the selected group.

Message Sequence Diagram

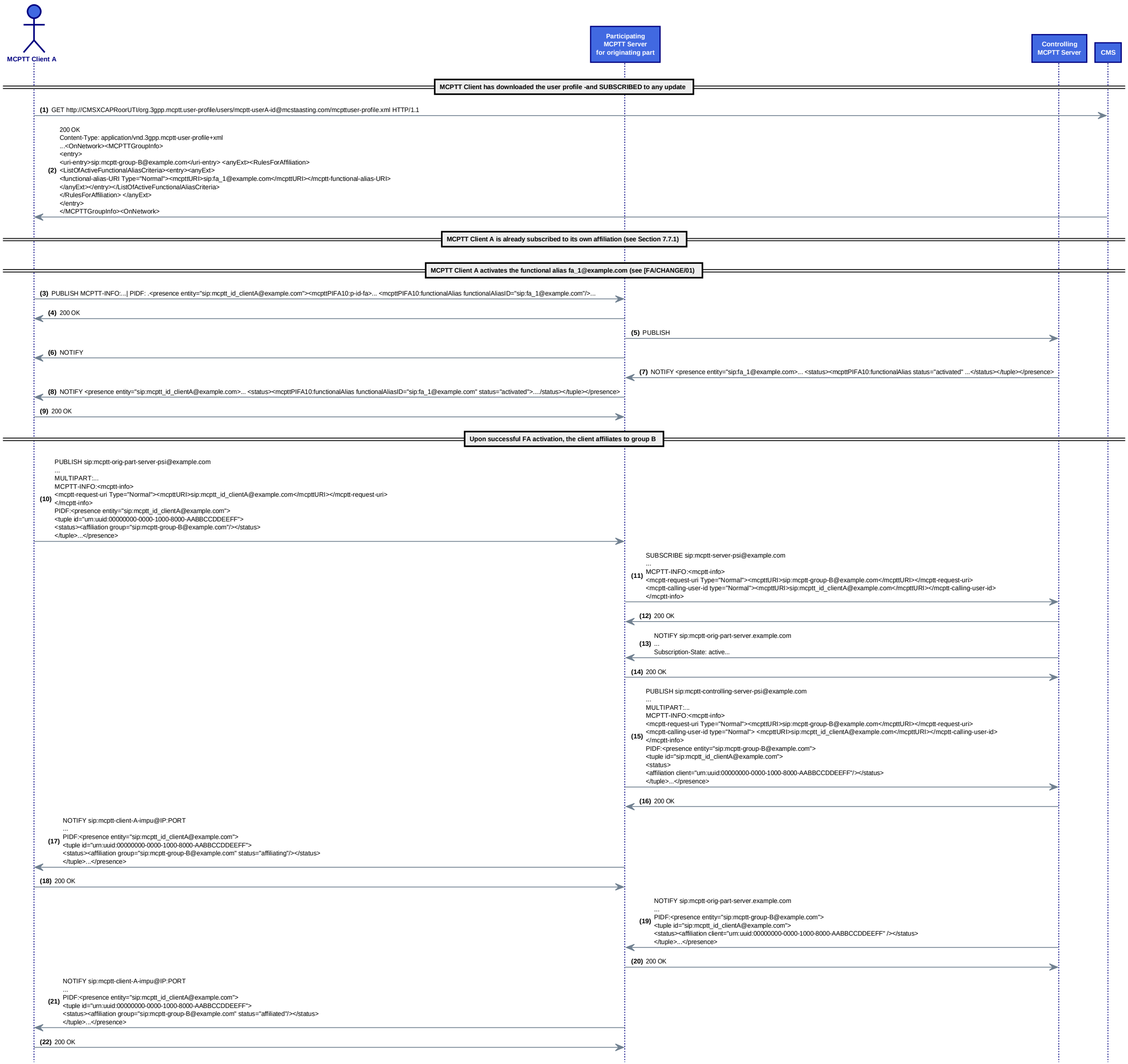

Figure 88a: AFFIL/CHANGE/04 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 97a: AFFIL/CHANGE/04 ITD

Interoperability Test Description			
Identifier	AFFIL/CHANGE/04		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and automatic affiliation to a group upon functional alias activation criteria is met		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL (clause 6.2) • MCPTT-Part_AFFIL (clause 6.5) • MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • User profile properly downloaded from the CMS		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) activates a functional alias
	2	check	Functional alias has been successfully activated and NOTIFY arrived at the client
	3	check	The client detects the functionalaliasactivation criteria is met and triggers automatically the affiliation to mcptt-group-B
	4	check	The PUBLISH is processed by the participating and resulting SUBSCRIBE/PUBLISH/NOTIFY to/from the controlling is carried out
	5	check	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

7.7.7 Affiliation change triggered by a functional-alias deactivation criteria [AFFIL/CHANGE/05]

Taking as precondition the AFFIL/CHANGE/04 situation, upon the deactivation of the functional alias the client automatically de-affiliates to the associated group.

This test case describes how the affiliation status change procedure (as defined in clause 9.2.1.2) is initiated for deaffiliation when a functional alias criteria based rule is fulfilled. Therefore, according to the definition of the User profile in clause 8.3.2.7 of ETSI TS 124 484 [14], the <RulesForDeAffiliation> element within the <anyExt> element of the <entry> element within the <MCPTTGroupInfo> list element of the <OnNetwork> element indicates that "…upon a change in functional alias activation status to the MCPTT client to evaluate the rules. "If for any rule … any functional alias criteria is fulfilled the MCPTT client triggers the group affiliation".

More specifically, the element <ListOfActiveFunctionalAliasCriteria> contains one or more <entry> elements containing the <anyExt> element set to the functional alias whose activation or deactivation trigger evaluation of the rules.

NOTE: The assumption of deactivating the functional alias triggering the de-affiliation does not univocally match the description in clause 8.3.2.7 of ETSI TS 124 484 [14]. Another interpretation may be that upon an activation of that functional alias it should de-affiliate to the group.

Message Sequence Diagram

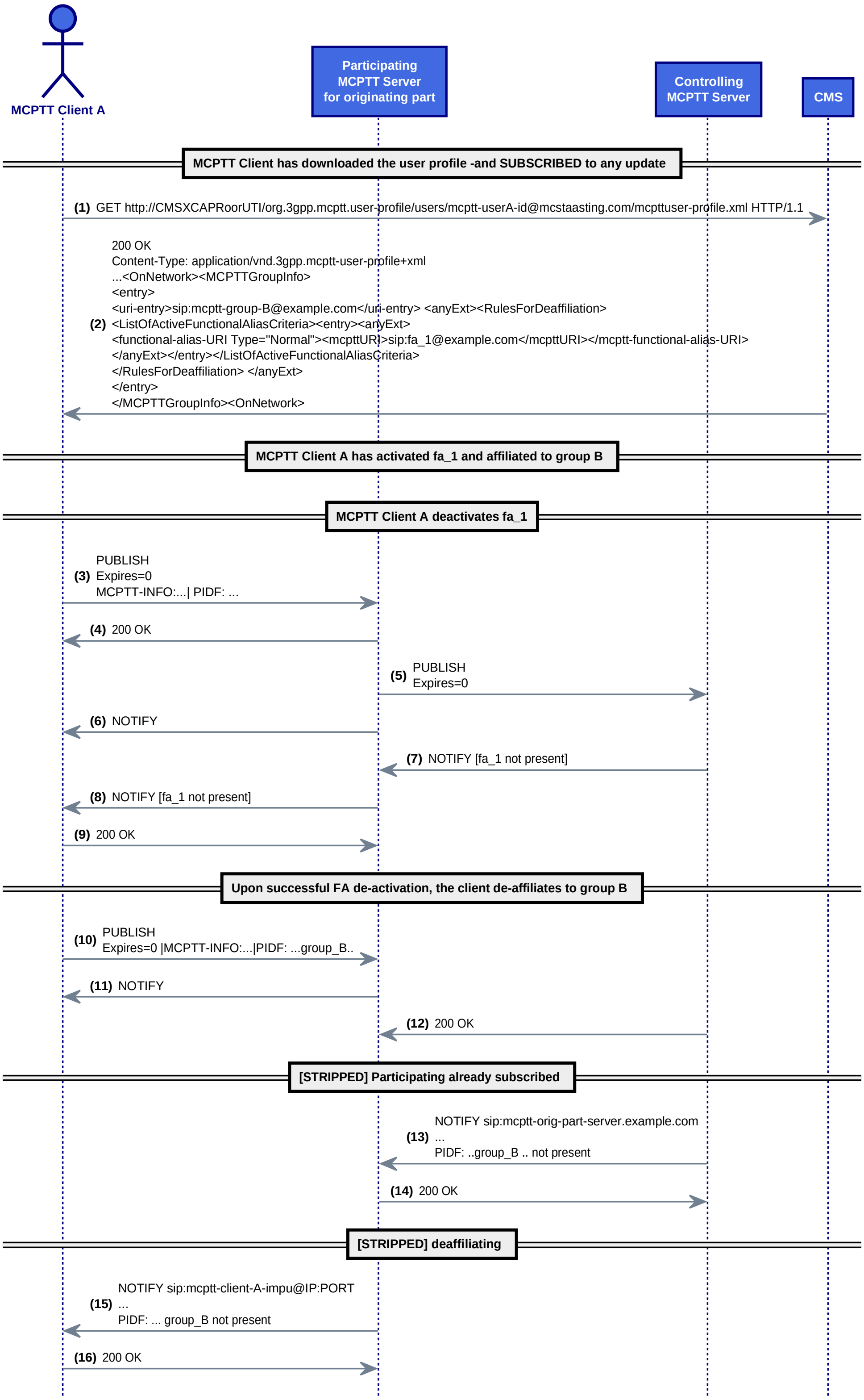

Figure 88b: AFFIL/CHANGE/05 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 97b: AFFIL/CHANGE/05 ITD

Interoperability Test Description			
Identifier	AFFIL/CHANGE/05		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and automatic deaffiliation to a group upon functional alias deactivation		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL (clause 6.2) • MCPTT-Part_AFFIL (clause 6.5) • MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • User profile properly downloaded from the CMS • Client has already activated fa_1 and therefore affiliated to group-B		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) de-activates a functional alias
	2	check	Functional alias has been successfully de-activated and NOTIFY arrived at the client
	3	check	The client detects the functionalaliasactivation criteria is met and triggers automatically the affiliation to mcptt-group-B
	4	check	The PUBLISH is processed by the participating and resulting SUBSCRIBE/PUBLISH/NOTIFY to/from the controlling is carried out
	5	check	The MCPTT controlling server sends a NOTIFY related to the deafillition to the participating
	6	check	(de) affiliation information is correctly received at the MCPTT Client upon proper NOTIFY forwarding by its participating

7.7.8 Affiliation change triggered by implicit affiliation in an on demand pre-arranged group call [AFFIL/CHANGE/06]

This test case will show the implicit affiliation mechanism during the initiation of an on demand pre-arranged group call. As described in clause 9.2.2.12 in ETSI TS 124 379 [9] upon receiving a SIP request (i.e. initial SIP INVITE) that requires implicit affiliation of the sending MCPTT client to an MCPTT group, the participating MCPTT function shall replace the list of the MCPTT group information entries stored in the served MCPTT client information entry with a candidate list of the MCPTT group information entries. Such candidate list (in the simplest case where no N2 related constraints are in place) will comprise every MCPTT group ID which has an MCPTT group information entry in the served list of the MCPTT and if expired or not present the new MCPTT group id from the originating request with a status set to "affiliating".

When receiving the initial SIP INVITE the controlling server will perform the procedures of clause 9.2.2.3.8 to determine if the MCPTT user is eligible to be affiliated to the MCPTT group and, if this is the case will carry out the clause 9.2.2.3.7 procedures. Those involve the update internal user information entries and later clause 9.2.2.3.5 perform the procedures specified in clause 9.2.2.3.5 for the served MCPTT group ID (involving the notification of affiliation to the participating).

Message Sequence Diagram

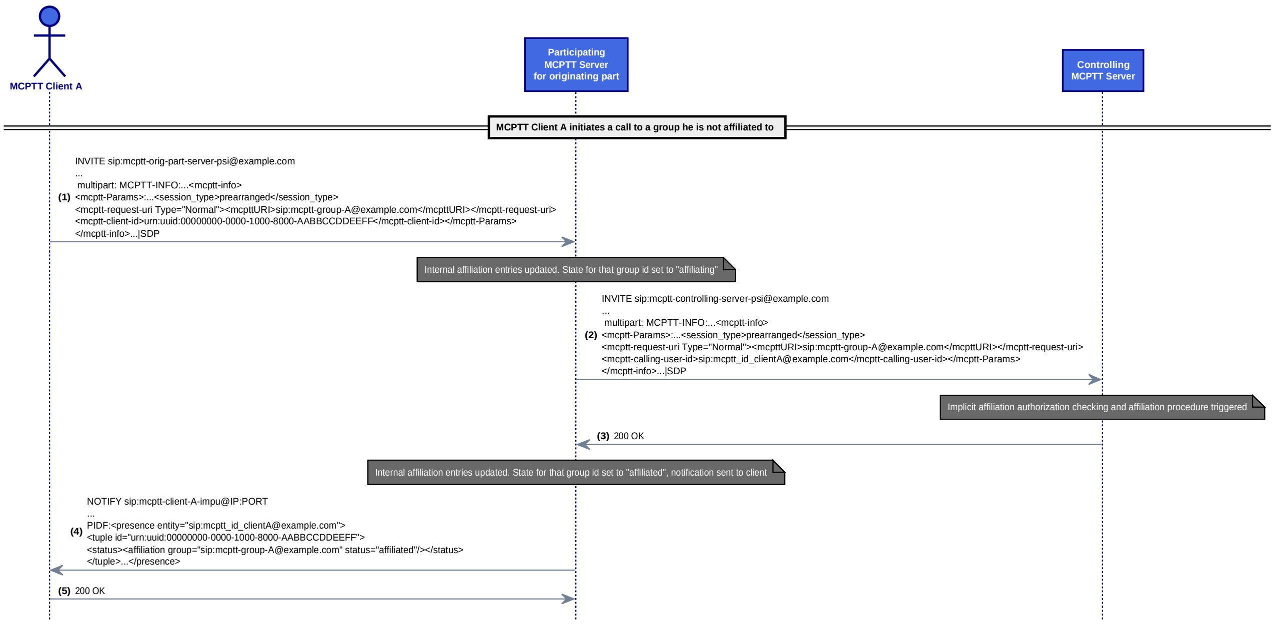

Figure 88c: AFFIL/CHANGE/06 Message Sequence

Message Details

Trace Pending

Interoperability Test Description

Table 97c: AFFIL/CHANGE/06 ITD

Interoperability Test Description			
Identifier	AFFIL/CHANGE/06		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and implicit affiliation to a group during initial call setup		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL (clause 6.2) • MCPTT-Part_AFFIL (clause 6.5) • MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • User profile properly downloaded from the CMS • Client A is subscribed to group A affiliation status but NOT explicitely affiliated		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) initiates the on demand prearranged group call
	2	check	The participating server updates its internal affiliation information with a new candidate list
	3	check	The INVITE is forwarded to the controlling which verifies the implicit affiliation authorization and answers 200 OK -and triggers internal affiliation procedures and subsequent notification not shown in the diagram related to clause 9.2.2.5 in ETSI TS 124 379 [9]
	4	check	NOTIFY generated by the participating server arrives at the client
	5	verify	The MCPTT client receives the updated affiliation information

7.7.9 Affiliation change triggered by implicit affiliation during service authorization [AFFIL/CHANGE/07]

This test case will show the implicit affiliation mechanism during service authorization. As described in clause 7.3.3 in ETSI TS 124 379 [9] upon receiving a "poc-settings" SIP PUBLISH request for service authorization, the participating MCPTT function shall carry out the service authorization. If successful, it shall download the MCPTT user profile from the MCPTT user database if not already stored at the MCPTT server and use the <selected-user-profile-index> element of the poc-settings event package if included to identify the active MCPTT user profile for the MCPTT client.

Furthermore, if an <ImplicitAffiliations> element is contained in the <OnNetwork> element of the MCPTT user profile document with one or more <entry> elements containing an MCPTT group the MCPTT shall perform implicit affiliation as specified in clause 9.2.2.2.15 in ETSI TS 124 379 [9] for the served MCPTT ID.

That means that it shall consider a copy of the list of the MCPTT group information entries of the served MCPTT client information entry as the served list of the MCPTT group information entries, shall construct the candidate list of the MCPTT group information entries adding a new entry for each MCPTT group ID contained in an <entry> element of the <ImplicitAffiliations> element in the <OnNetwork> element of the MCPTT user profile document with no priori entry and shall set the affiliation status of the new MCPTT group information entry to the "affiliating" state, and the expiration time of the new MCPTT group information entry to the current time increased with the candidate expiration interval.

If the number of candidate groups is less than N2 shall replace the list of the MCPTT group information entries stored in the served MCPTT client information entry with the candidate list of the MCPTT group information entries and shall perform the procedures specified in clause 9.2.2.2.6 in ETSI TS 124 379 [9] for the served MCPTT ID and each MCPTT group ID.

Message Sequence Diagram

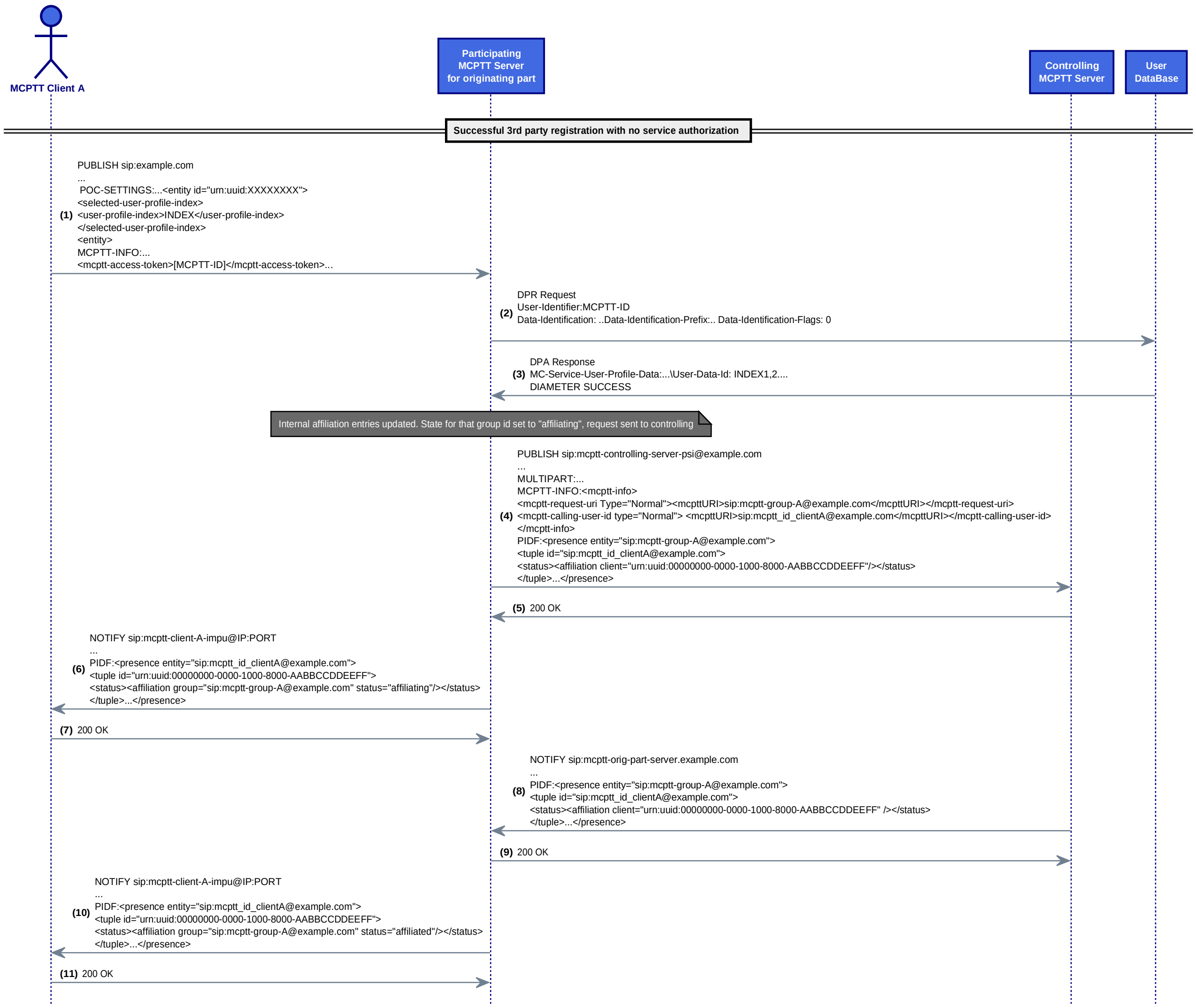

Figure 88d: AFFIL/CHANGE/07 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 97d: AFFIL/CHANGE/07 ITD

Interoperability Test Description			
Identifier	AFFIL/CHANGE/07		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and implicit affiliation to a group during service authorization		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL (clause 6.2) • MCPTT-Part_AFFIL (clause 6.5) • MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • User profile properly downloaded from the UDB		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) PUBLISHes poc-settings for service authorization
	2	check	The participating server retrieves the user profile(s) from the user database and selects the proper one according to the index
	3	check	The participating carries outs implicit affiliation to the required groups ids by sending NOTIFYes to the controlling server(s)
	4	check	NOTIFY generated by the controlling arrives at the participating
	5	verify	The MCPTT client receives the updated affiliation information from the participating

7.8 Location (LOC)

7.8.1 MCPTT Client Configuration upon 3rd party register [LOC/3PRTYREG/CONFIG/01]

Upon a successful IMS registration and 3rd 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

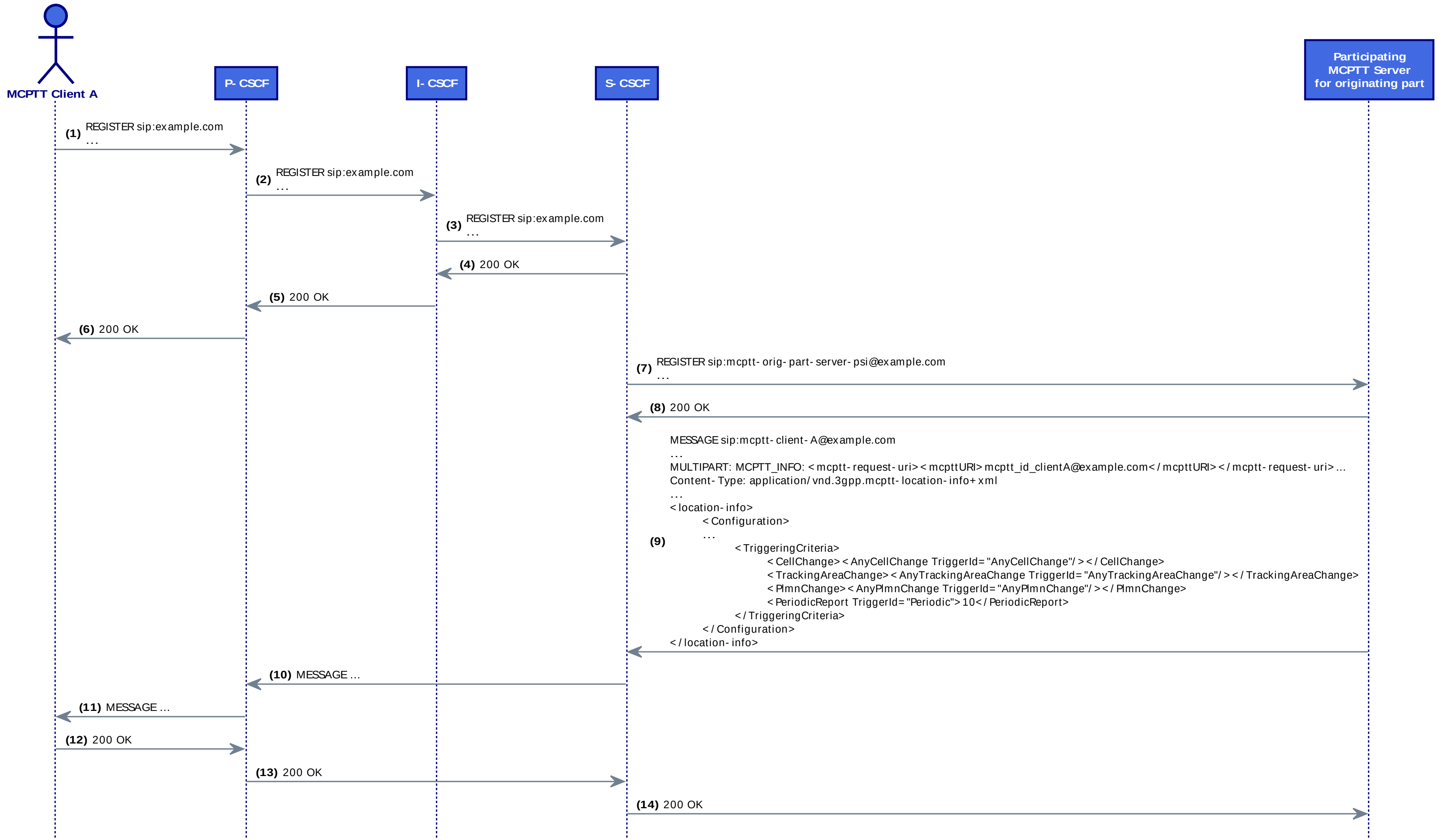

Figure 89: LOC/3PRTYREG/CONFIG/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 98: LOC/3PRTYREG/CONFIG/01 ITD

Interoperability Test Description			
Identifier	LOC/3PRTYREG/CONFIG/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and configuration of location reporting mechanism		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_LOC • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_REGAUTH, MCPTT-Part_LOC (clause 6.5)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers		
Test Sequence	**Step**	**Type**	**Description**
	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			
Identifier	LOC/REQUEST/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and the procedures for requesting a location report		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_LOC • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_LOC (clause 6.5)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers		
Test Sequence	**Step**	**Type**	**Description**
	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

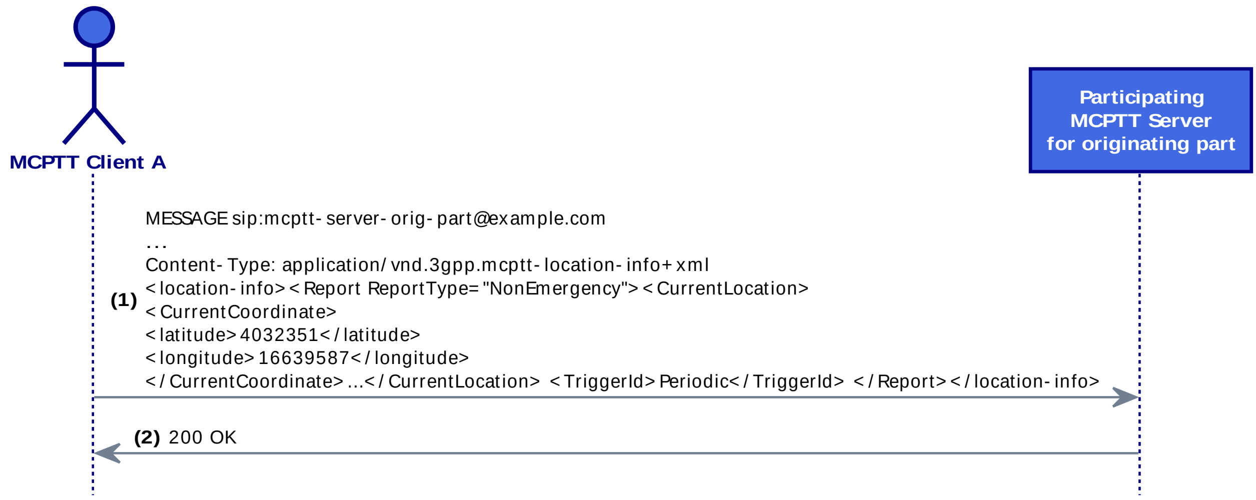

Figure 91: LOC/SUBMISSION/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 100: LOC/SUBMISSION/01 ITD

Interoperability Test Description	
Identifier	LOC/SUBMISSION/01
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and the procedures for submitting a location report
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_LOC • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_LOC (clause 6.5)
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers • MCPTT Client Location reporting mechanism properly configured

Interoperability Test Description			
Test Sequence	**Step**	**Type**	**Description**
	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 location 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 2nd 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.

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.

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			
Identifier	CSC-CMS/UECONF/UE/01		
Test Objective	Verify IP connectivity, proper access from the MCS Client to the CMS and retrieval and parsing of Release 14 XML		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])		
Applicability	• MCPTT-Client_CMS, MCData-Client_CMS, MCVideo-Client_CMS		
Pre-test conditions	• IP connectivity among all elements of the specific scenario, access to the CSC servers via the proper APN • CMSXCAPRootURI offline provisioned		
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

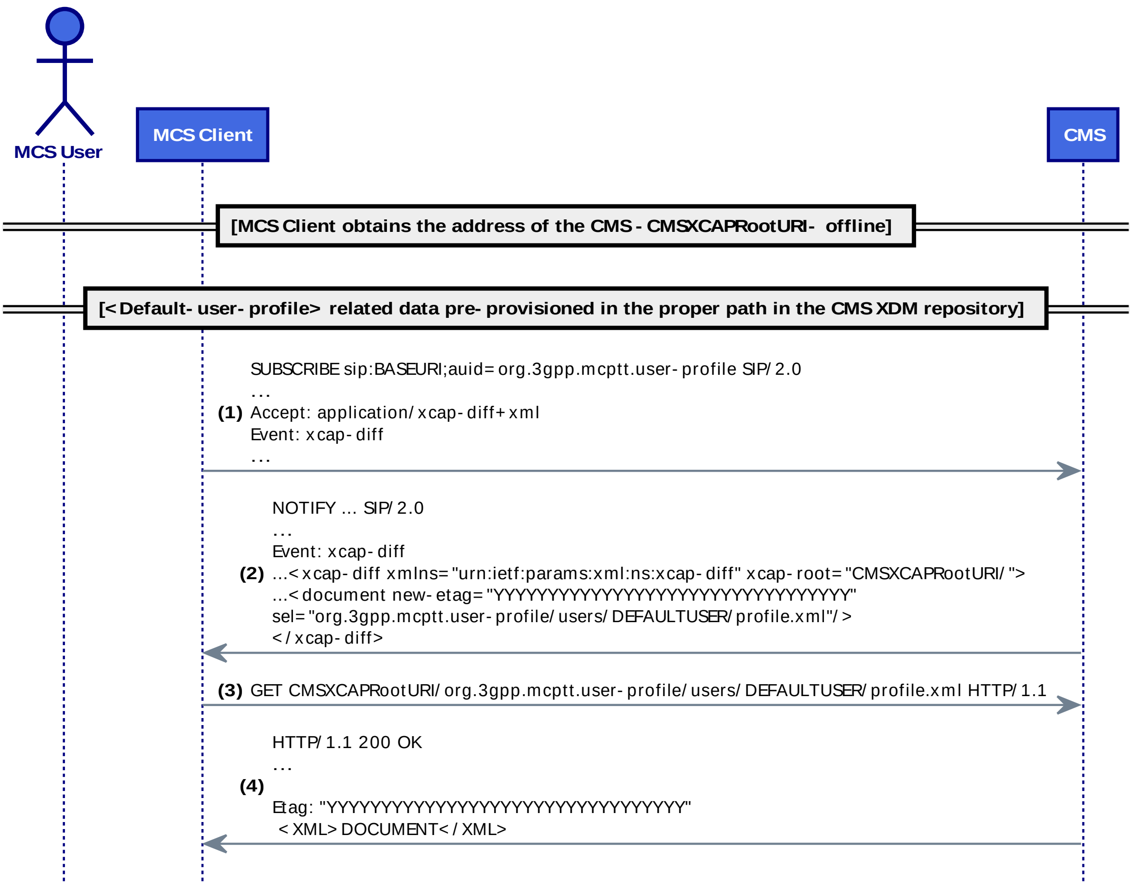

Figure 93: CSC-CMS/UPROCONF/UE/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 102: CSC-CMS/UPROCONF/UE/01 ITD

Interoperability Test Description			
Identifier	CSC-CMS/UPROCONF/UE/01		
Test Objective	Verify IP connectivity, proper access from the MCS Client to the CMS and retrieval and parsing of Release 14 XML		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])		
Applicability	• MCPTT-Client_CMS, MCData-Client_CMS, MCVideo-Client_CMS		
Pre-test conditions **Pre-test conditions**	• IP connectivity among all elements of the specific scenario, access to the CSC servers via the proper APN • CMSXCAPRootURI offline provisioned and <Default-user-profile> related data pre-provisioned in the proper path in the CMS XDM repository		
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 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

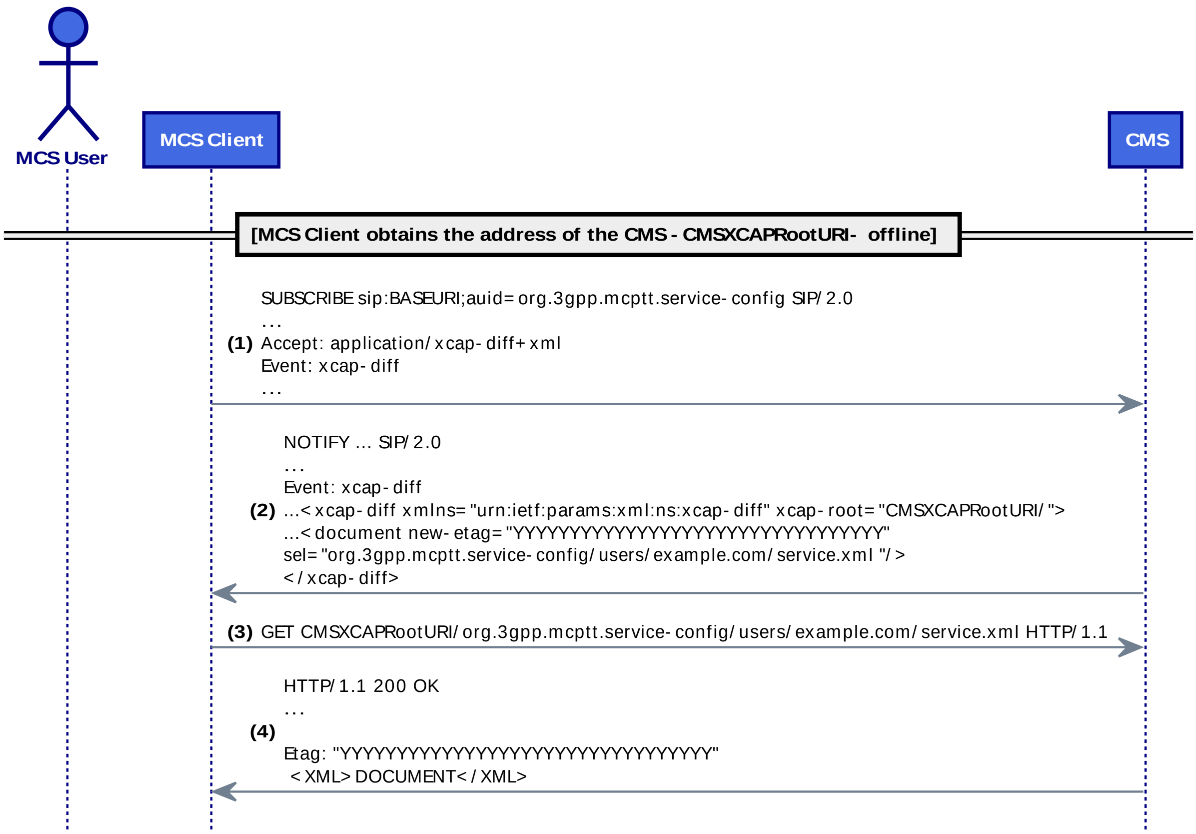

Figure 94: CSC-CMS/SERVCONF/UE/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 103: CSC-CMS/SERVCONF/UE/01 ITD

	Interoperability Test Description
Identifier	CSC-CMS/SERVCONF/UE/01
Test Objective	Verify IP connectivity, proper access from the MCS Client to the CMS and retrieval and parsing of Release 14 XML
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])
Applicability	• MCPTT-Client_CMS, MCData-Client_CMS, MCVideo-Client_CMS
Pre-test conditions	• IP connectivity among all elements of the specific scenario, access to the CSC servers via the proper APN • CMSXCAPRootURI offline provisioned

Interoperability Test Description			
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-

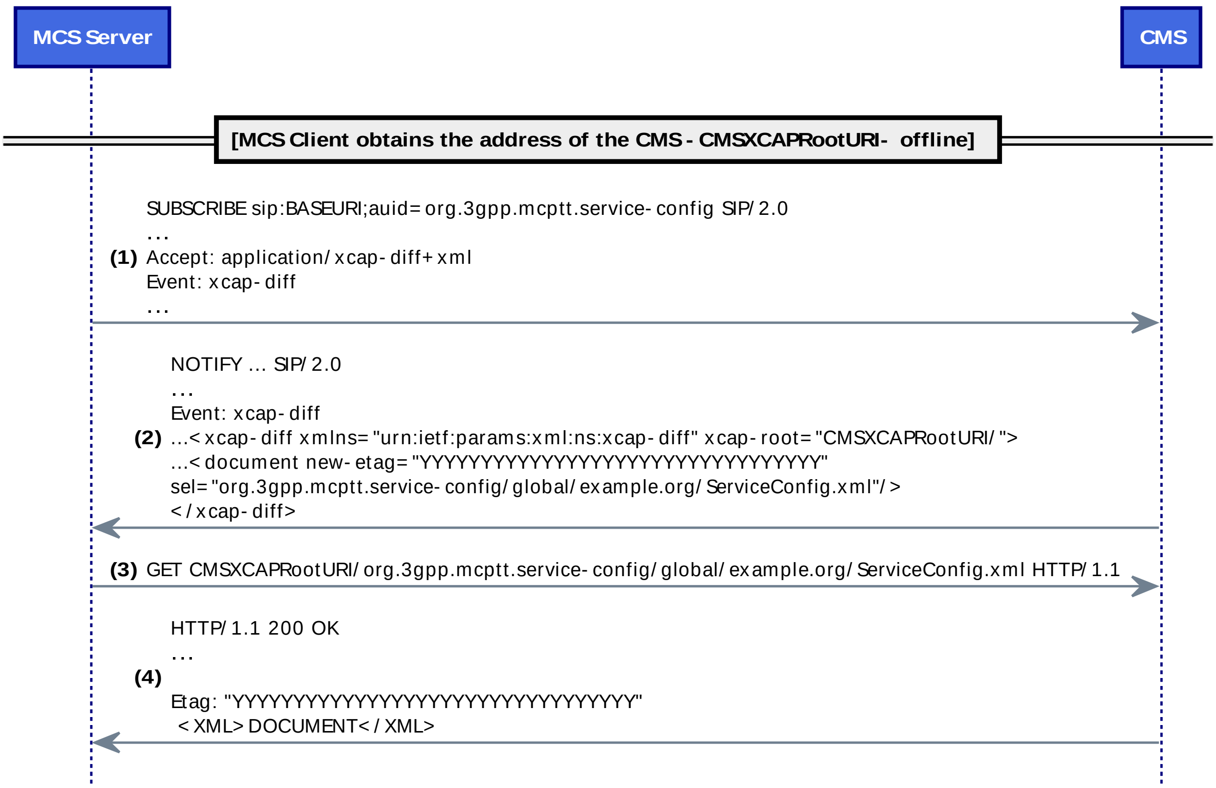

Figure 95: CSC-CMS/SERVCONF/MCSSERV/01 Message Sequence

Message Sequence Diagram - SUBSCRIPTION PROXY-

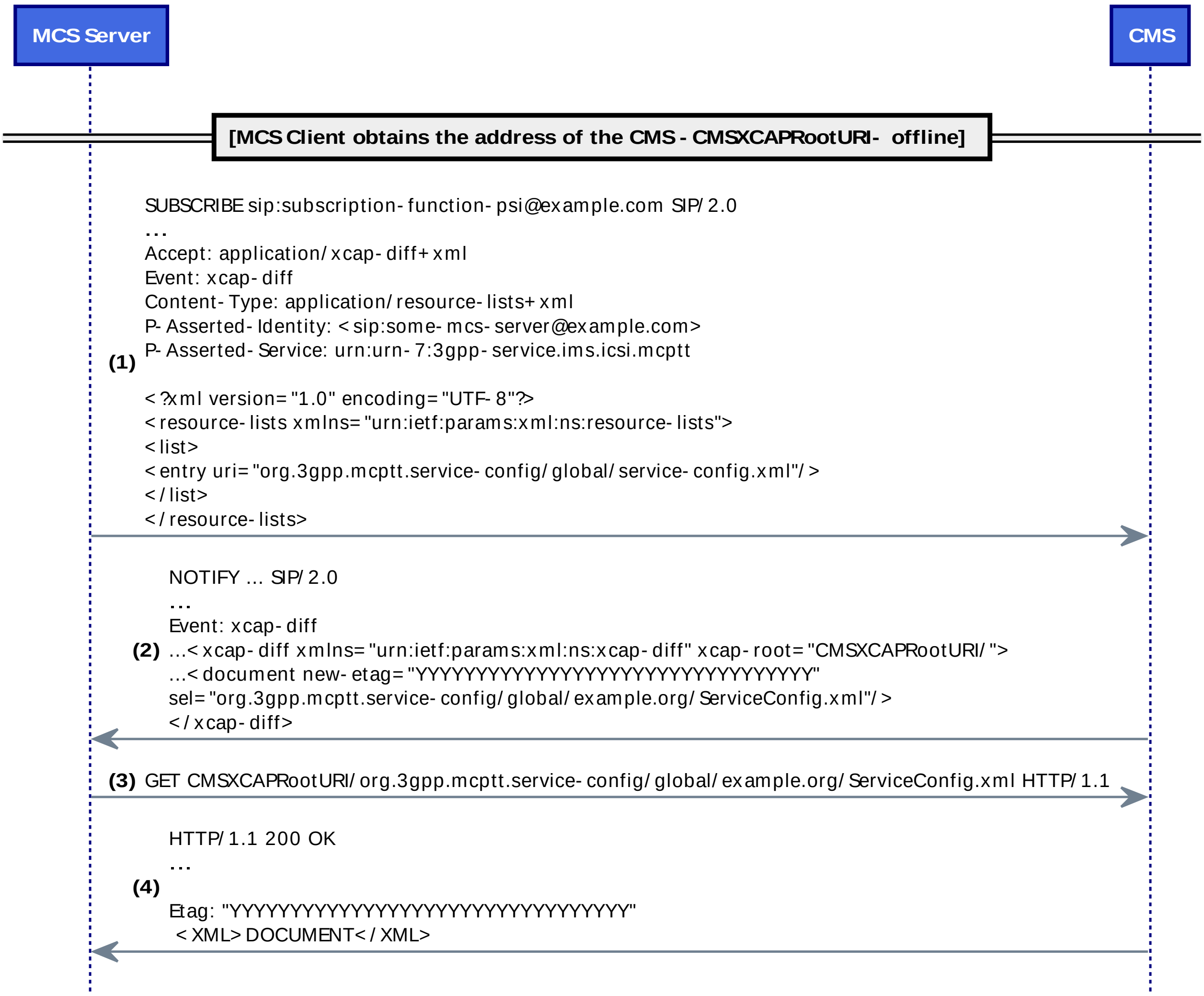

Figure 96: CSC-CMS/SERVCONF/MCSSERV/01-b Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 104: CSC-CMS/SERVCONF/MCSSERV/01 ITD

Interoperability Test Description			
Identifier	CSC-CMS/SERVCONF/MCSSERV/01		
Test Objective	Verify IP connectivity, proper access from the MCS Server to the CMS and retrieval and parsing of Release 14 XML		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])		
Applicability	• MCPTT-Server_CMS, MCData-Server_CMS, MCVideo-Server_CMS		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • CMSXCAPRootURI offline provisioned		
Test Sequence	**Step**	**Type**	**Description**
	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: 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

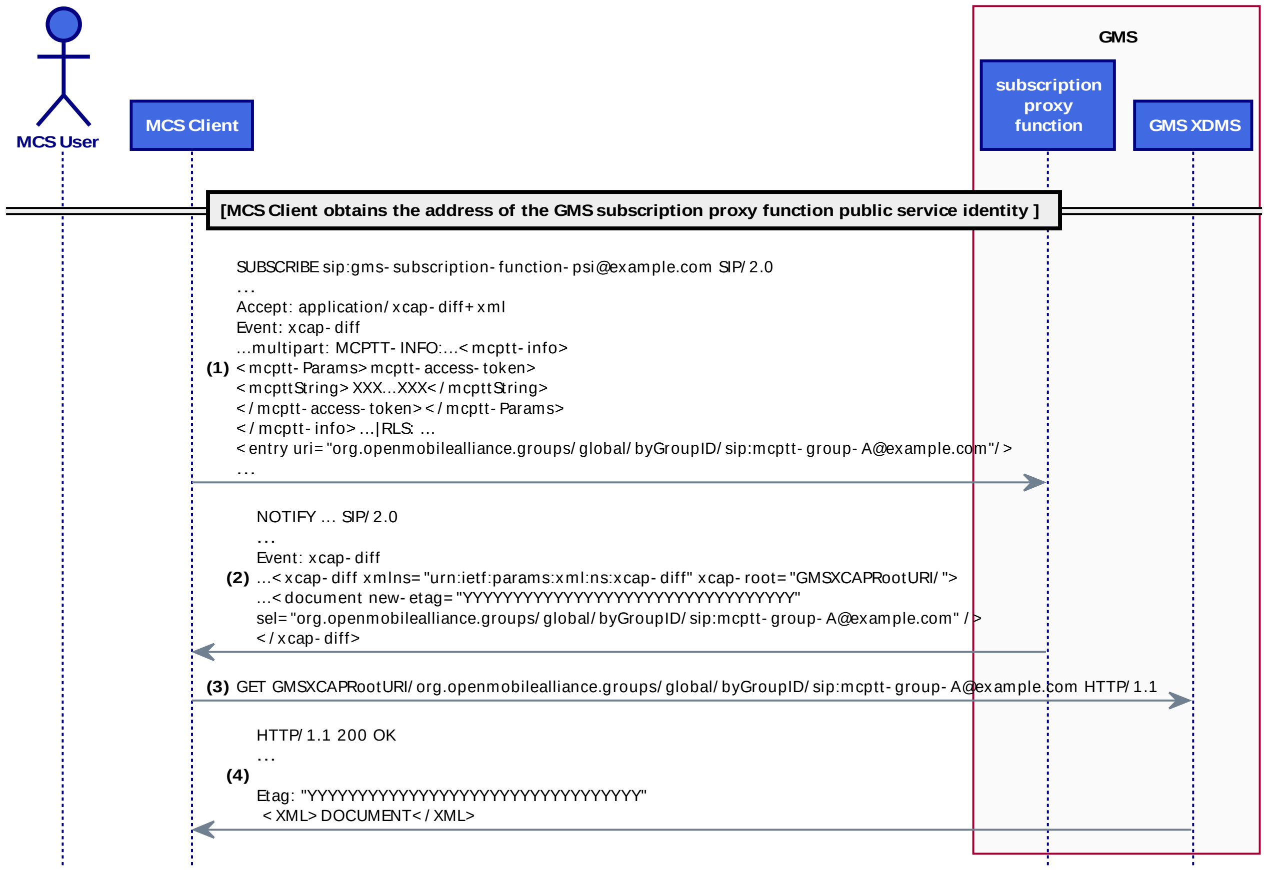

Figure 97: CSC-GMS/GROUP/UE/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

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)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])
Applicability	• MCPTT-Client_GMS, MCData-Client_GMS, MCVideo-Client_GMS
Pre-test conditions	• IP connectivity among all elements of the specific scenario, access to the CSC servers via the proper APN • GMS subscription proxy function public service identity preconfigured

Interoperability Test Description			
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

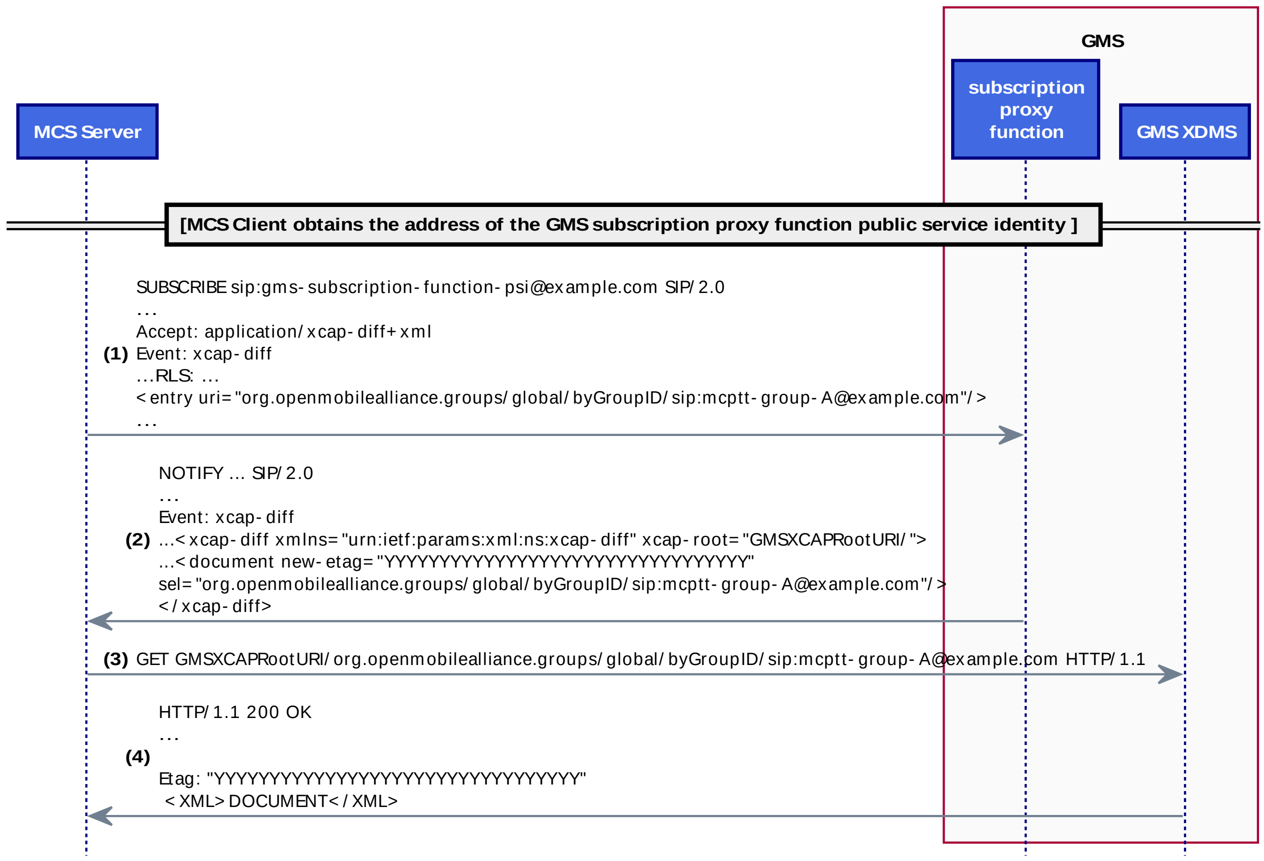

Figure 98: CSC-GMS/GROUP/MCSSERV/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 106: CSC-GMS/GROUP/MCSSERV/01 ITD

Interoperability Test Description			
Identifier	CSC-GMS/GROUP/MCSSERV/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)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])		
Applicability	• MCPTT-Ctrl_GMS, MCData-Ctrl_GMS, MCVideo-Ctrl_GMS		
Pre-test conditions	• IP connectivity among all elements of the specific scenario, access to the CSC servers via the proper APN • GMS subscription proxy function public service identity preconfigured		
Test Sequence	**Step**	**Type**	**Description**
	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

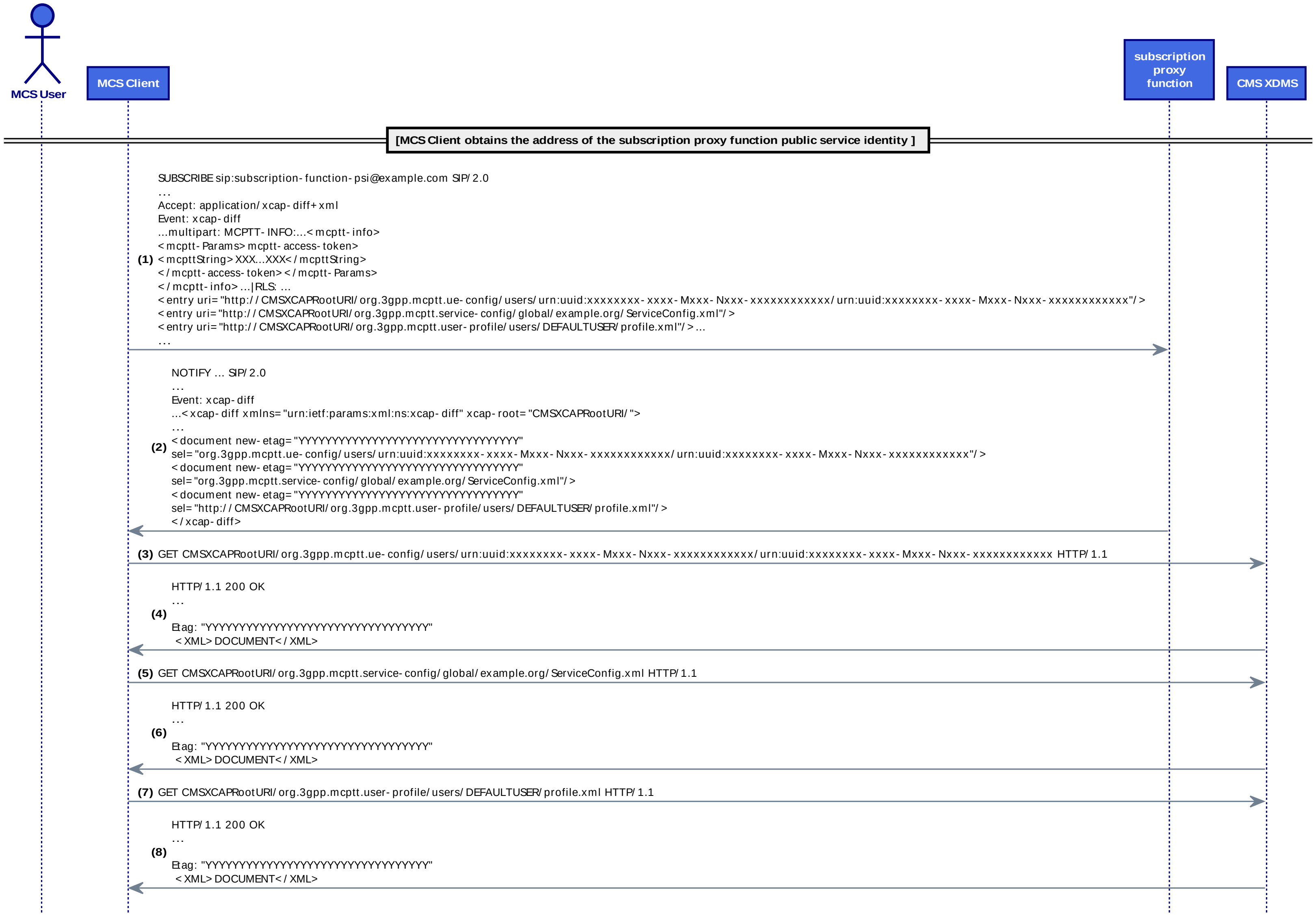

Figure 99: CSC/MULTIPLESUBS/UE/01 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 107: CSC/MULTIPLESUBS/UE/01 ITD

Interoperability Test Description			
Identifier	CSC/MULTIPLESUBS/UE/01		
Test Objective	Verify IP connectivity, proper access from the MCS Client to the CMS and retrieval and parsing of Release 14 XML		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])		
Applicability	• MCPTT-Client_CMS, MCData-Client_CMS, MCVideo-Client_CMS		
Pre-test conditions	• IP connectivity among all elements of the specific scenario, access to the IdMS via the proper APN and tunnelling mechanism -if any-		
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

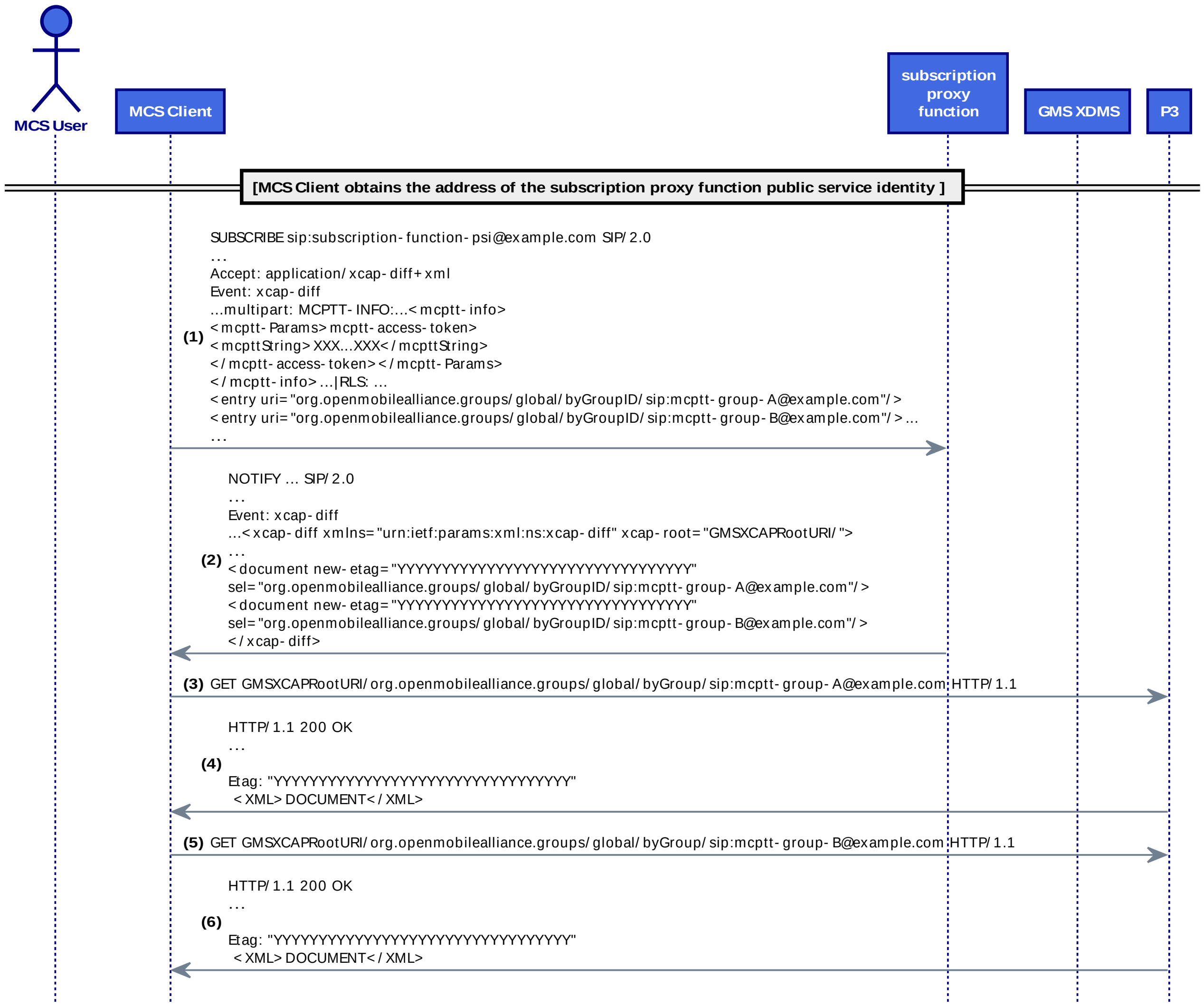

Figure 100: CSC/MULTIPLESUBSGMSGROUP/UE/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 108: CSC/MULTIPLESUBSGMSGROUP/UE/01 ITD

Interoperability Test Description			
Identifier	CSC/MULTIPLESUBSGMSGROUP/UE/01		
Test Objective	Verify IP connectivity, proper access from the MCS Client to the CMS and retrieval and parsing of Release 14 XML		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• GMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])		
Applicability	• MCPTT-Client_GMS, MCData-Client_GMS, MCVideo-Client_GMS		
Pre-test conditions	• IP connectivity among all elements of the specific scenario, access to the IdMS via the proper APN and tunnelling mechanism - if any		
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	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

7.9.9 Successful configuration of MC 4G APN [CSC/RAN/APN/01]

Clause 7.2.2.7 in ETSI TS 124 484 [14] states that the <MCPTT-to-con-ref>, <MC-common-core-to-con-ref> and <MC-ID-to-con-ref> elements of the <service> element in the <HPLMN> element of the <on-network> element of the MCS UE initial configuration indicate the APN/DNN to be used in the PLMN for the respective service. They correspond to the "ConRef" elements of clauses 8.2.21, 8.2.24 and 8.2.27 in ETSI TS 124 483 [55], respectively. For a <VPLMN> element the corresponding elements are specified in clauses 8.2.33, 8.2.36 and 8.2.39 in ETSI TS 124 483 [55] respectively.

Therefore a MCS client, either online or offline provisioned with a MCS UE initial conf MO will process the /<x>/OnNetwork/HPLMN/Service/MCPTTToConRef/<x>/ConRef, /<x>/OnNetwork/HPLMN/Service/MCCommonCoreToConRef/<x>/ConRef and /<x>/OnNetwork/HPLMN/Service/MCIDMToConRef/<x>/ConRef components, setup the APNs accordingly and carry out the RRC/NAS operations to activate them. Afterwards the data packets corresponding to each type of traffic will be forwarded throught the (typically default bearer of) the proper APN.

Message Sequence Diagram

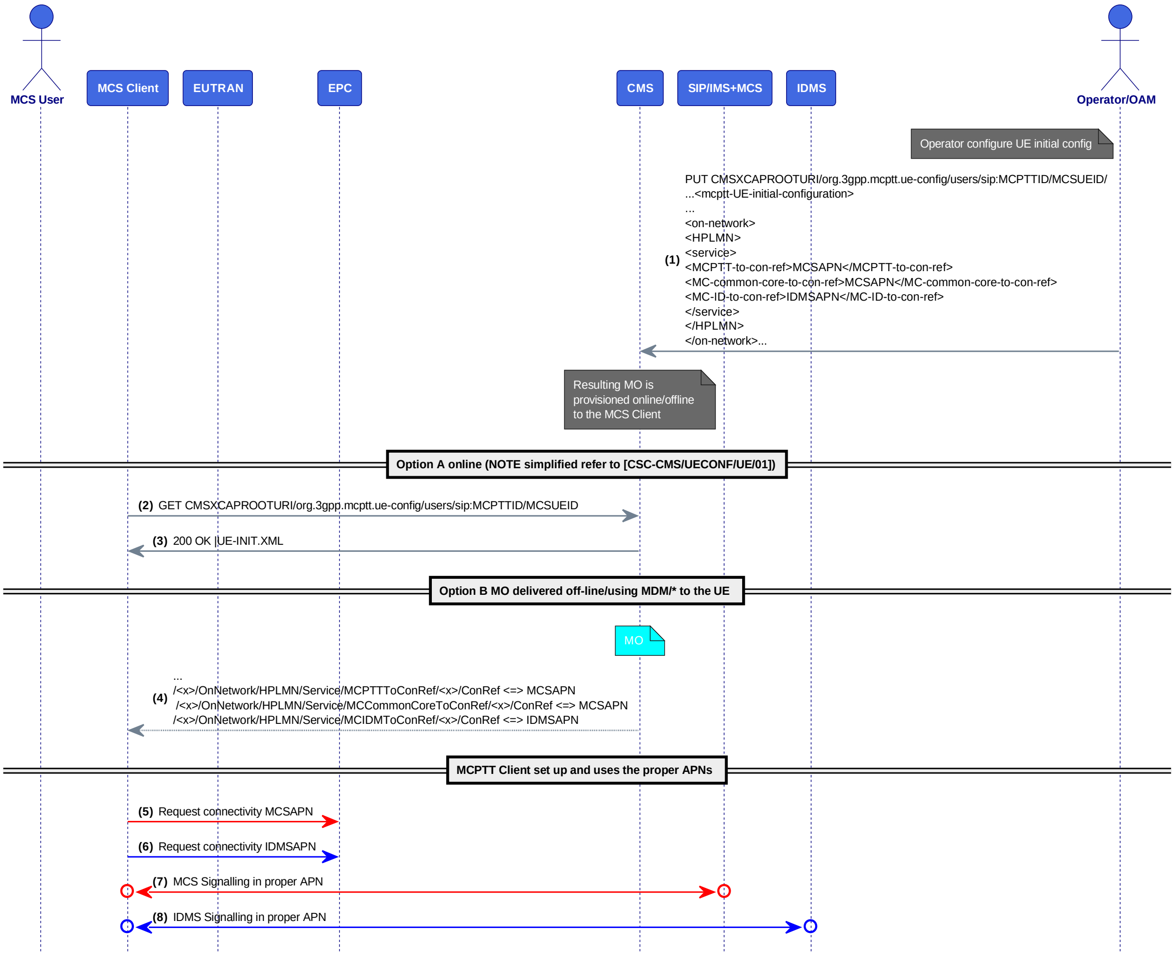

Figure 100a: CSC/RAN/APN/01 Message Sequence

Message Details

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Trace Pending
```

Table 108a: CSC/RAN/APN/01 ITD

Interoperability Test Description			
Identifier	CSC/RAN/APN/01		
Test Objective	Verify IP connectivity, check proper provisioning and configuration of the 4G APNs		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])		
Applicability	• MCPTT-Client_CMS, MCData-Client_CMS, MCVideo-Client_CMS • UE_MC-APN		
Pre-test conditions	• IP connectivity among all elements of the specific scenario		
Test Sequence	**Step**	**Type**	**Description**
	1	check	MCS Operator provisions the (master) ue init information resulting in a suitable ue initial configuration for a MCPTT ID and client ID
	2	check	MCS client is provisioned with that information either offline or online using out of the scope methods including but not limited to access to the CMS, usage of MDM or any online/offline MO provisioning method
	3	check	MCS client parses the information and configures the APN(s) properly
	4	check	The MCS client (and UE) activates the configured APN(s)
	5	verify	MCS and IDMS signalling use the proper APN(s)

7.9.10 Successful configuration of MC 5G DNN [CSC/RAN/DNN/01]

This test case is totally equivalent to [CSC/RAN/APN/01] but using a 5G network. Therefore, DNN(s) will be configured and used.

Message Sequence Diagram

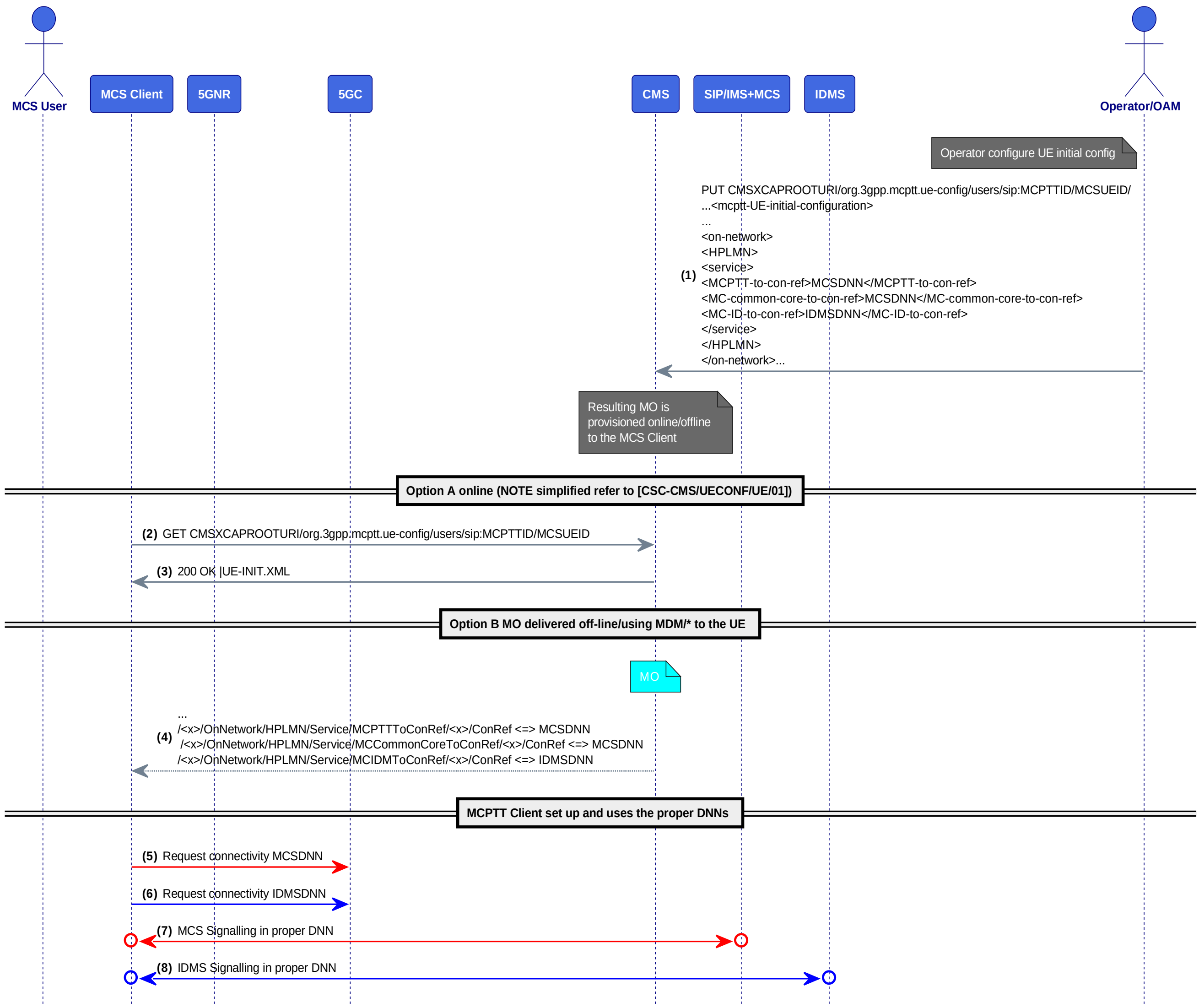

Figure 100b: CSC/RAN/DNN/01 Message Sequence

Message Details

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Trace Pending
```

Table 108b: CSC/RAN/APN/01 ITD

Interoperability Test Description			
Identifier	CSC/RAN/APN/01		
Test Objective	Verify IP connectivity, check proper provisioning and configuration of 5G DNNs		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])		
Applicability	• MCPTT-Client_CMS, MCData-Client_CMS, MCVideo-Client_CMS • UE_MC-5G-DNN_5Qis		
Pre-test conditions	• IP connectivity among all elements of the specific scenario		
Test Sequence	**Step**	**Type**	**Description**
	1	check	MCS Operator provisions the (master) ue init information resulting in a suitable ue initial configuration for a MCPTT ID and client ID
	2	check	MCS client is provisioned with that information either offline or online using out of the scope methods including but not limited to access to the CMS, usage of MDM or any online/offline MO provisioning method
	3	check	MCS client parses the information and configures the 5G DNNs(s) properly
	4	check	The MCS client (and UE) activates the configured DNN(s)
	5	verify	MCS and IDMS signalling use the proper DNN(s)

7.9.11 Successful configuration of MC 5G slice [CSC/RAN/5GSLICE/01

In the same clause 7.2.2.7 in ETSI TS 124 484 [14] apart rom the <MCPTT-to-con-ref>, <MC-common-core-to-con-ref> and <MC-ID-to-con-ref> elements, the optional usage of the <MCPTT-ref-SNSSAI>, <MCData-ref-SNSSAI>, <MCVideo-ref-SNSSAI>, <MC-common-core-ref-SNSSAI> and <MC-ID-ref-SNSSAI> elements of the <anyExt> element in the <service> element in the <HPLMN> element indicate the S-NSSAI to be used in the PLMN for the respective services. They correspond to the equivalent elements of clauses 8.2.27A* in ETSI TS 124 483 [55], respectively. For a <VPLMN> element the corresponding elements are specified in clauses 8.2.29A* in ETSI TS 124 483 [55].

Therefore a MCS client, either online or offline provisioned with a MCS UE initial conf MO will process the /<x>/OnNetwork/HPLMN/Service/MCPTTRefSNSSAI/<x>/ RefSNSSAI, /<x>/OnNetwork/HPLMN/Service/MCCommonCoreRefSNSSAI/ <x>/RefSNSSAI, /<x>/OnNetwork/HPLMN/Service/MCIdMRefSNSSAI/<x>/RefSNSSAI, /<x>/OnNetwork/HPLMN/Service/MCDataRefSNSSAI/<x>/RefSNSSAI and /<x>/OnNetwork/HPLMN/Service/MCVideoRefSNSSAI/<x>/ RefSNSSAI components, setup the DNNs and slices accordingly and carry out the 5GC operations to activate them. Afterwards the data packets corresponding to each type of traffic will be forwarded throught the proper slice of the proper DNN.

Message Sequence Diagram

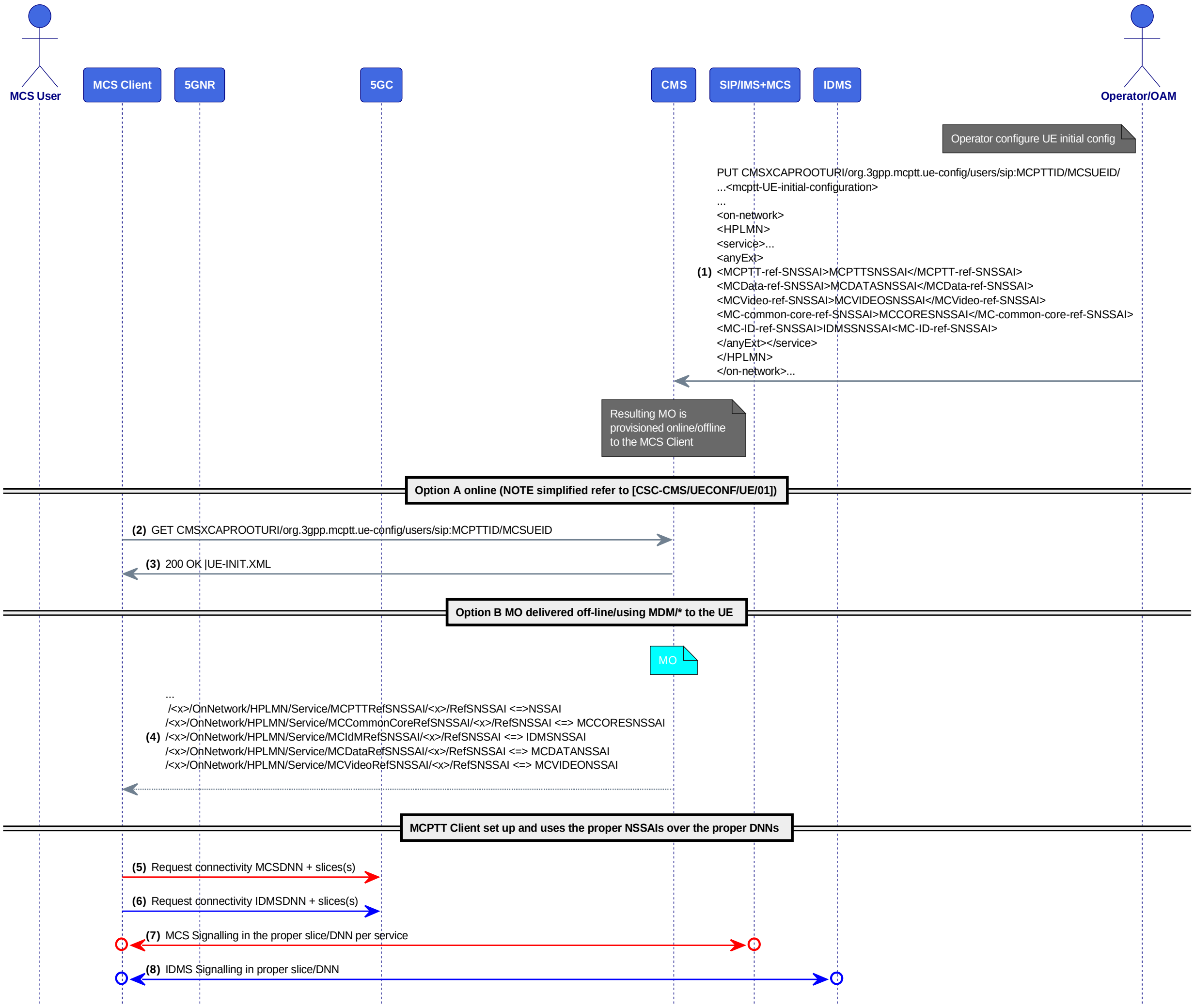

Figure 100c: CSC/RAN/5GSLICE/01 Message Sequence

Message Details

`Trace Pending`

Table 108c: CSC/RAN/5GSLICE/01 ITD

Interoperability Test Description			
Identifier	CSC/RAN/APN/01		
Test Objective	Verify IP connectivity, check proper provisioning and configuration of the 5G DNNs and per service slices		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• CMS access mechanism based on OMA XDM and SIP SUBSCRIBE/NOTIFY (see ETSI TS 124 484 [14])		
Applicability	• MCPTT-Client_CMS, MCData-Client_CMS, MCVideo-Client_CMS • UE_MC-5G-DNN_5Qis		
Applicability	• MCPTT-Client_CMS, MCData-Client_CMS, MCVideo-Client_CMS • UE_MC-APN		
Pre-test conditions	• IP connectivity among all elements of the specific scenario		
Test Sequence	**Step**	**Type**	**Description**
	1	check	MCS Operator provisions the (master) ue init information resulting in a suitable ue initial configuration for a MCPTT ID and client ID
	2	check	MCS client is provisioned with that information either offline or online using out of the scope methods including but not limited to access to the CMS, usage of MDM or any online/offline MO provisioning method
	3	check	MCS client parses the information and configures the DNN(s) and slices properly
	4	check	The MCS client (and UE) activates the configured DNN(s) and slices
	5	verify	MCS and IDMS signalling use the proper per service slice/DNN

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

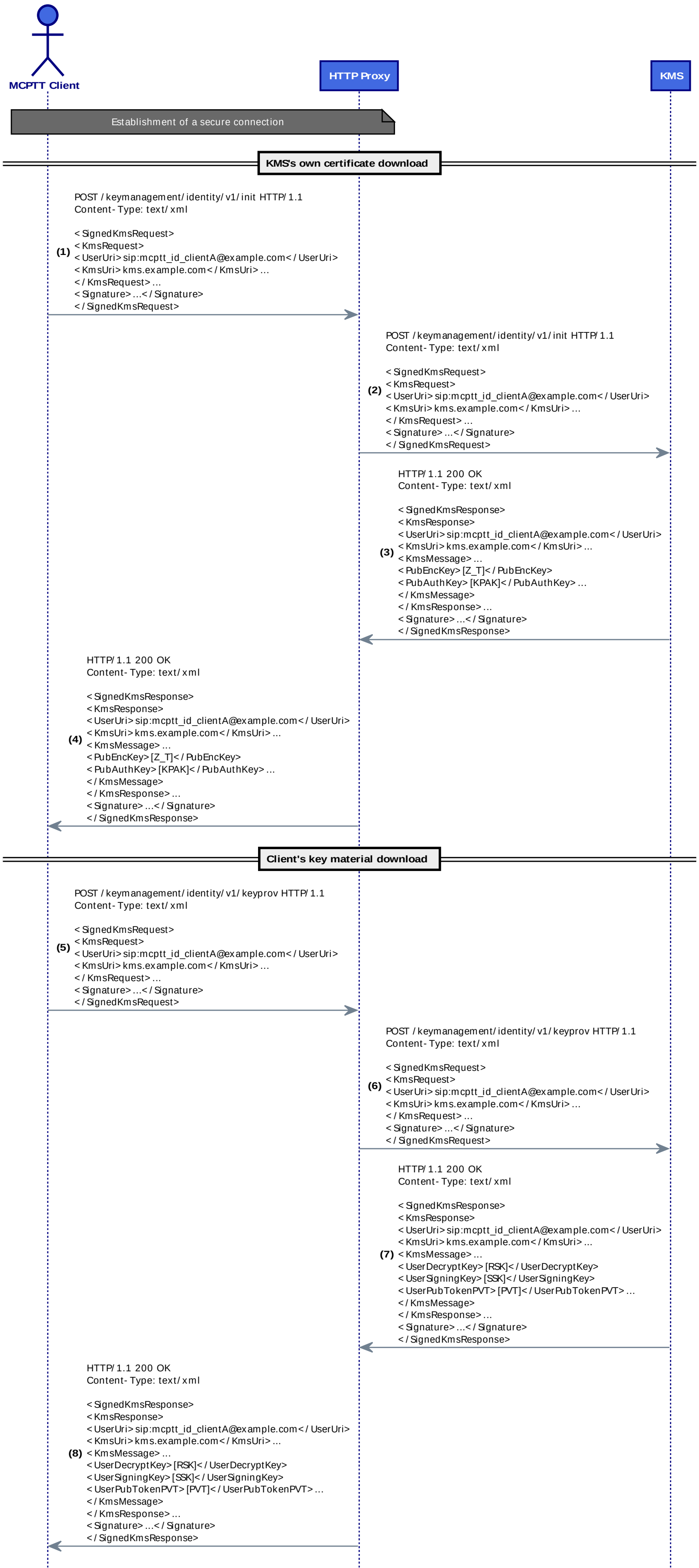

Figure 101: SEC/KEYMDOWNLOAD/WPROXY/01 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 109: SEC/KEYMDOWNLOAD/WPROXY/01 ITD

Interoperability Test Description			
Identifier	SEC/KEYMDOWNLOAD/WPROXY/01		
Test Objective	Verify KMS certificate and MCPTT client's key material download		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• HTTP (see IETF RFC 7230 [38]) • TLS (see IETF RFC 8446 [39]) • SSL (see IETF RFC 6101 [40])		
Applicability	• MCPTT-Client_KMS (clause 6.2)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Client previously authenticated in the IdMS -or the Identity and Access Token have been received by other means		
Test Sequence	**Step**	**Type**	**Description**
	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

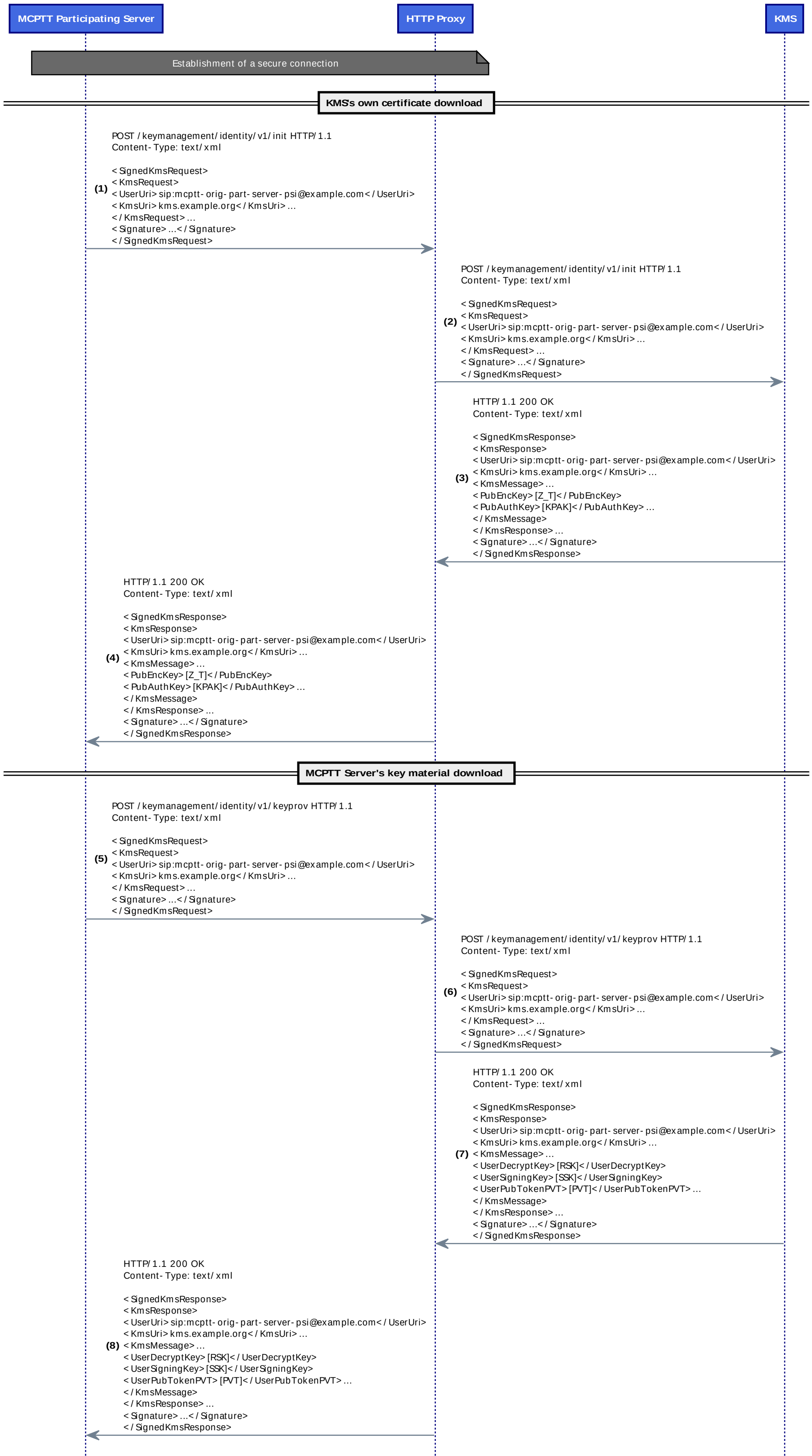

Figure 102: SEC/KEYMDOWNLOAD/WPROXY/02 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 110: SEC/KEYMDOWNLOAD/WPROXY/02 ITD

Interoperability Test Description			
Identifier	SEC/KEYMDOWNLOAD/WPROXY/02		
Test Objective	Verify KMS certificate and MCPTT server's key material download		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• HTTP (see IETF RFC 7230 [38]) • TLS (see IETF RFC 8446 [39]) • SSL (see IETF RFC 6101 [40])		
Applicability	• MCPTT-Part_KMS		
Pre-test conditions	• IP connectivity among all elements of the specific scenario		
Test Sequence	**Step**	**Type**	**Description**
	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

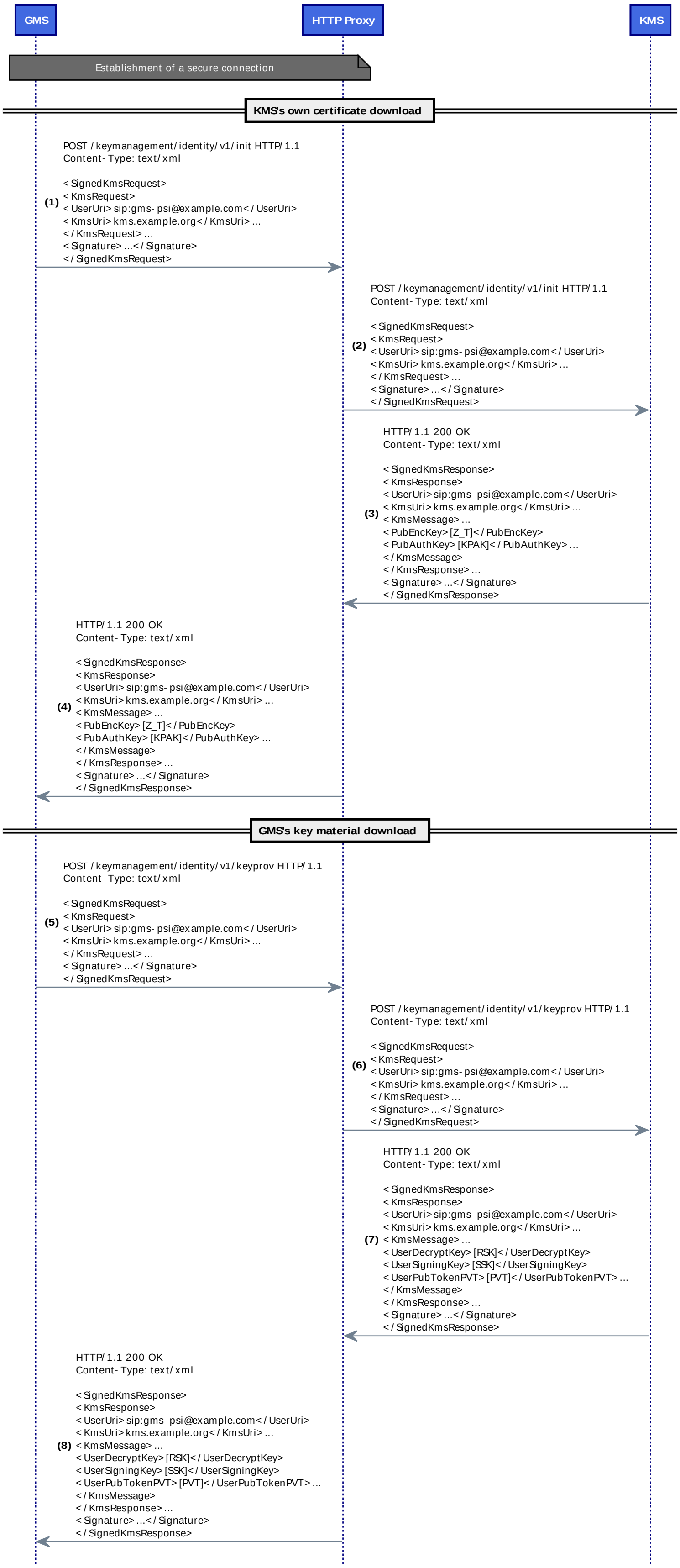

Figure 103: SEC/KEYMDOWNLOAD/WPROXY/03 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 111: SEC/KEYMDOWNLOAD/WPROXY/03 ITD

Interoperability Test Description			
Identifier	SEC/KEYMDOWNLOAD/WPROXY/03		
Test Objective	Verify KMS certificate and GMS' key material download		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• HTTP (see IETF RFC 7230 [38]) • TLS (see IETF RFC 8446 [39]) • SSL (see IETF RFC 6101 [40])		
Applicability	• GMS_KMS		
Pre-test conditions	• IP connectivity among all elements of the specific scenario		
Test Sequence	**Step**	**Type**	**Description**
	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

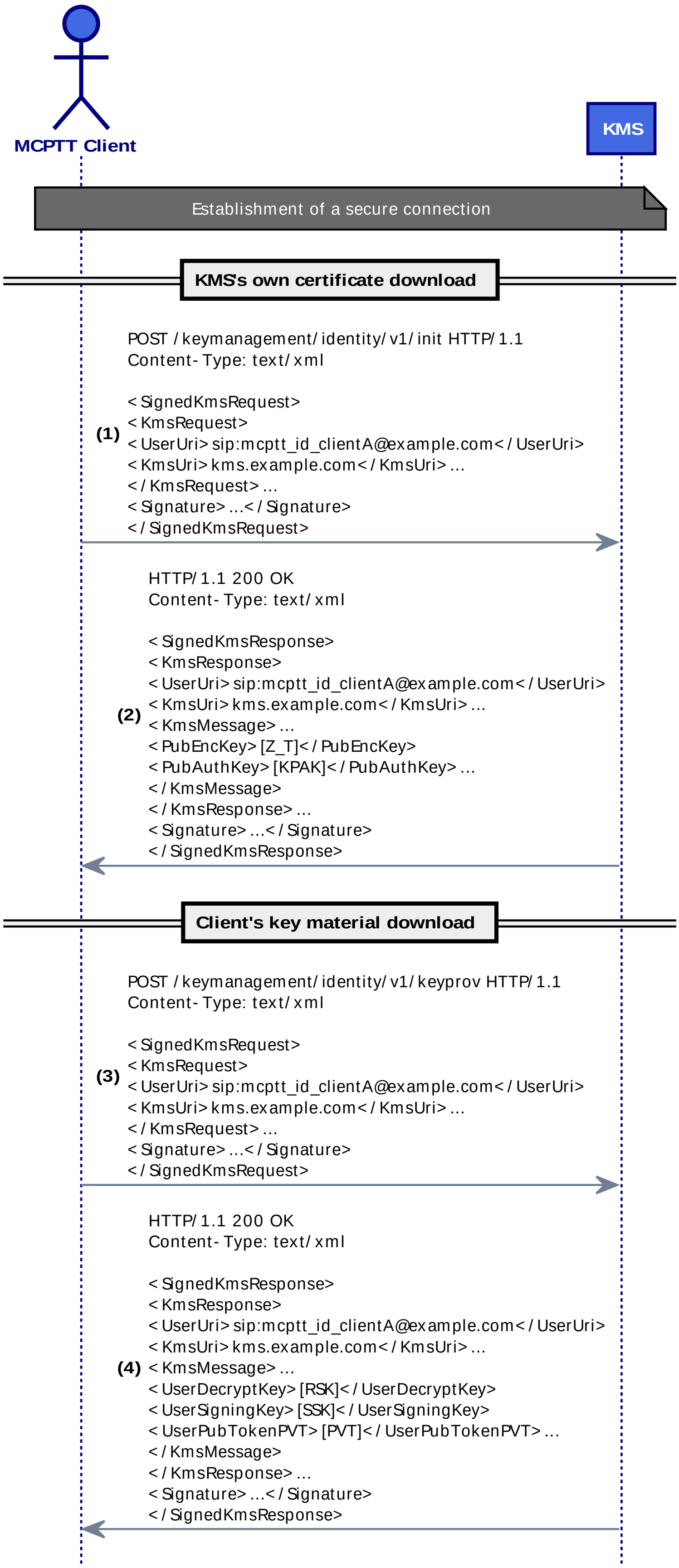

Figure 104: SEC/KEYMDOWNLOAD/WOPROXY/01 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 112: SEC/KEYMDOWNLOAD/WOPROXY/01 ITD

	Interoperability Test Description		
Identifier	SEC/KEYMDOWNLOAD/WOPROXY/01		
Test Objective	Verify KMS certificate and MCPTT client's key material download		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• HTTP (see IETF RFC 7230 [38]) • TLS (see IETF RFC 8446 [39]) • SSL (see IETF RFC 6101 [40])		
Applicability	• MCPTT-Client_KMS (clause 6.2)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Client previously authenticated in the IdMS or the Identity and Access Token have been received by other means		
Test Sequence	**Step**	**Type**	**Description**
	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

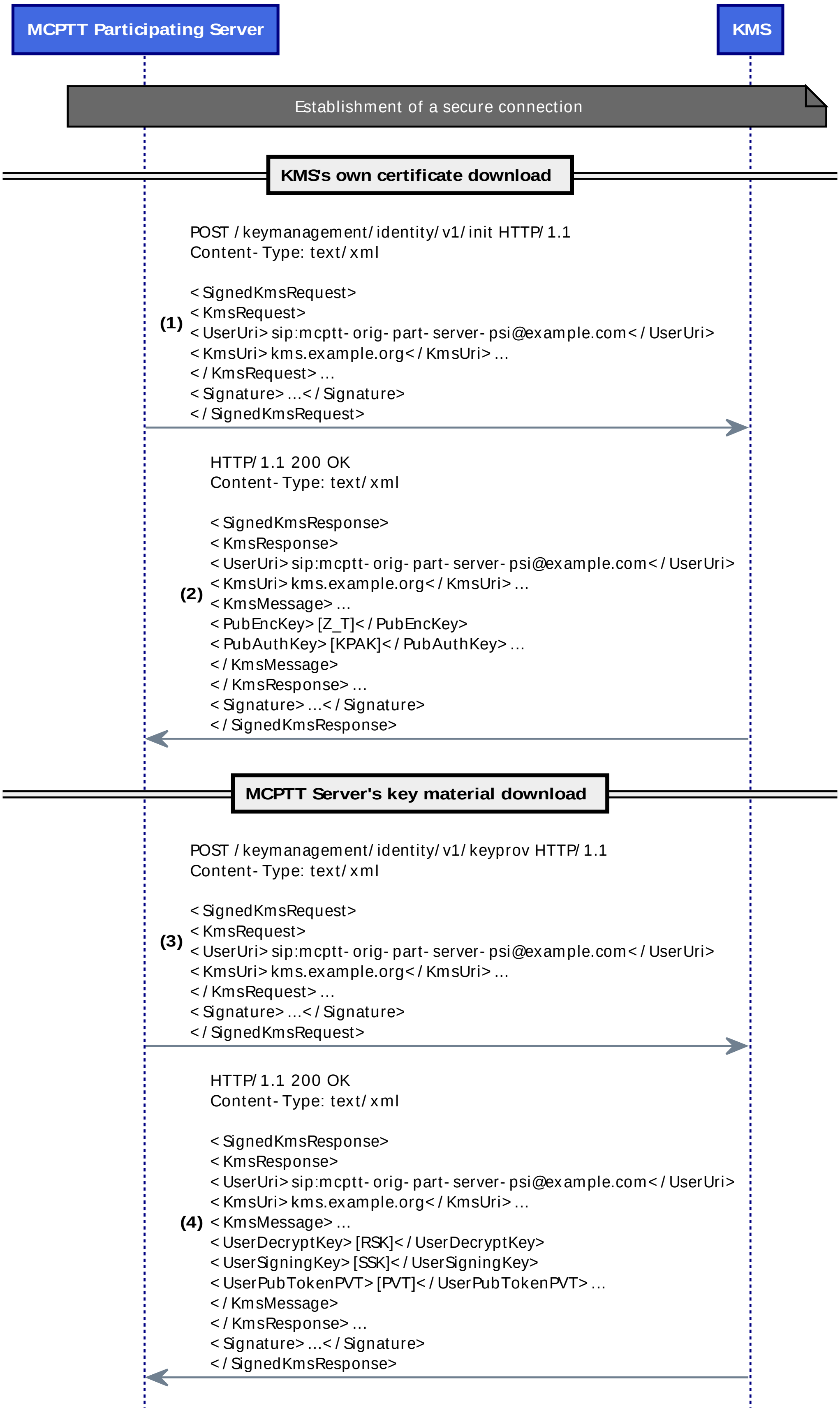

Figure 105: SEC/KEYMDOWNLOAD/WOPROXY/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 113: SEC/KEYMDOWNLOAD/WOPROXY/02 ITD

Interoperability Test Description			
Identifier	SEC/KEYMDOWNLOAD/WOPROXY/02		
Test Objective	Verify KMS certificate and MCPTT server's key material download		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• HTTP (see IETF RFC 7230 [38]) • TLS (see IETF RFC 8446 [39]) • SSL (see IETF RFC 6101 [40])		
Applicability	• MCPTT-Part_KMS (clause 6.2)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario		
Test Sequence	**Step**	**Type**	**Description**
	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

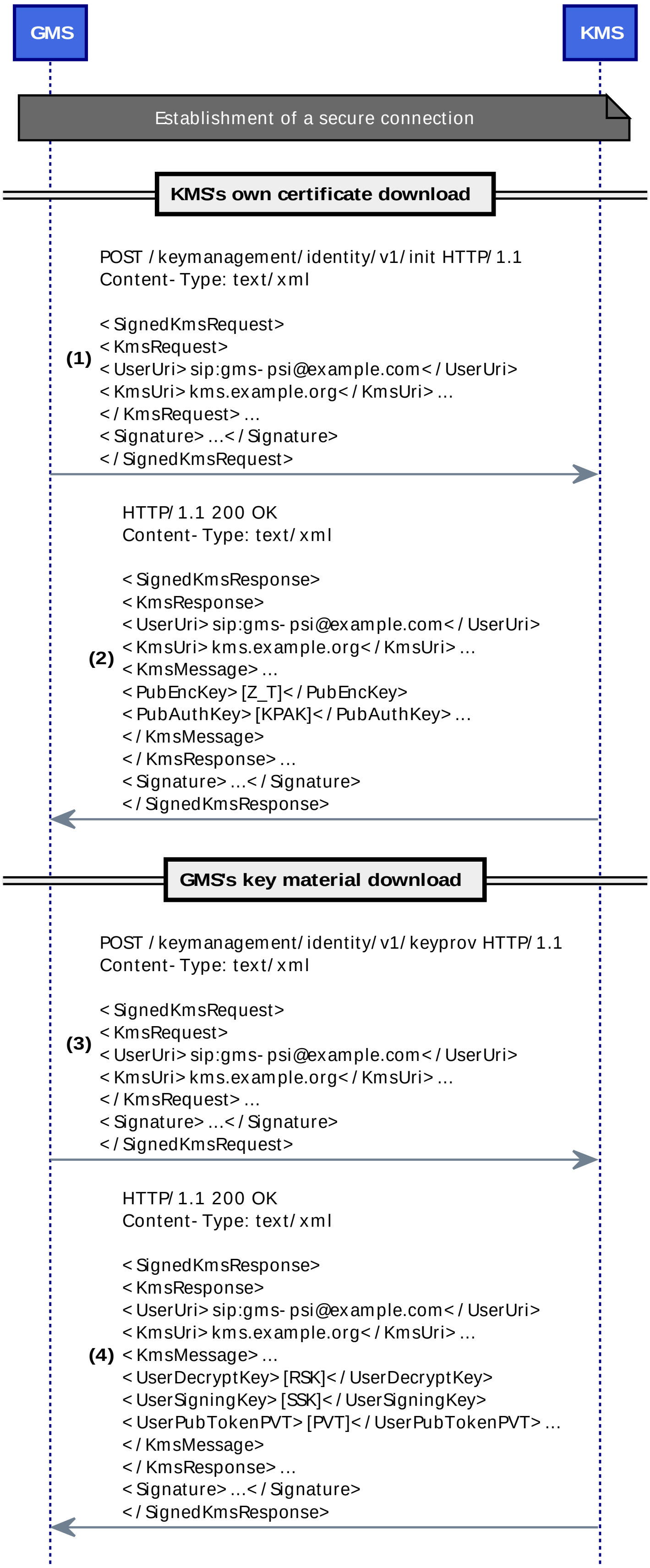

Figure 106: SEC/KEYMDOWNLOAD/WOPROXY/03 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 114: SEC/KEYMDOWNLOAD/WOPROXY/03 ITD

Interoperability Test Description			
Identifier	SEC/KEYMDOWNLOAD/WOPROXY/03		
Test Objective	Verify KMS certificate and GMS' key material download		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• HTTP (see IETF RFC 7230 [38]) • TLS (see IETF RFC 8446 [39]) • SSL (see IETF RFC 6101 [40])		
Applicability	• GMS_KMS (clause 6.2)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario		
Test Sequence	**Step**	**Type**	**Description**
	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

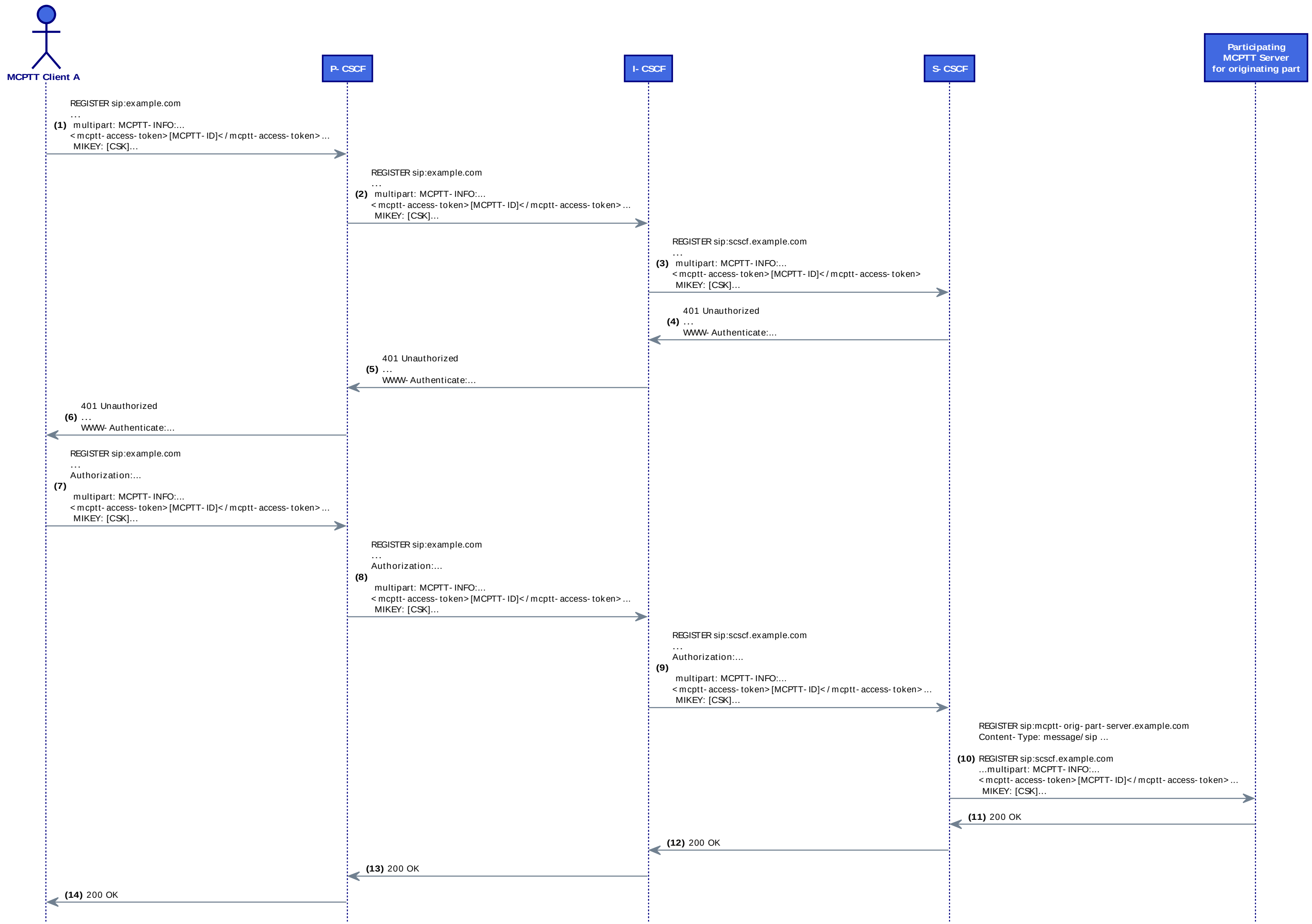

Figure 107: SEC/KEYDIST/CSK/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 115: SEC/KEYDIST/CSK/01 ITD

	Interoperability Test Description		
Identifier	SEC/KEYDIST/CSK/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and CSK distribution		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_KMS, MCPTT-Client_REGREG (clause 6.2) • MCPTT-Part_KMS, MCPTT-Part_REGAUTH (clause 6.7) • IMS_3RDPARTYREGISTER		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • Client has previously obtained key material from KMS • MCPTT server has previously obtained key material from KMS		
Test Sequence	**Step**	**Type**	**Description**
	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 3rd 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

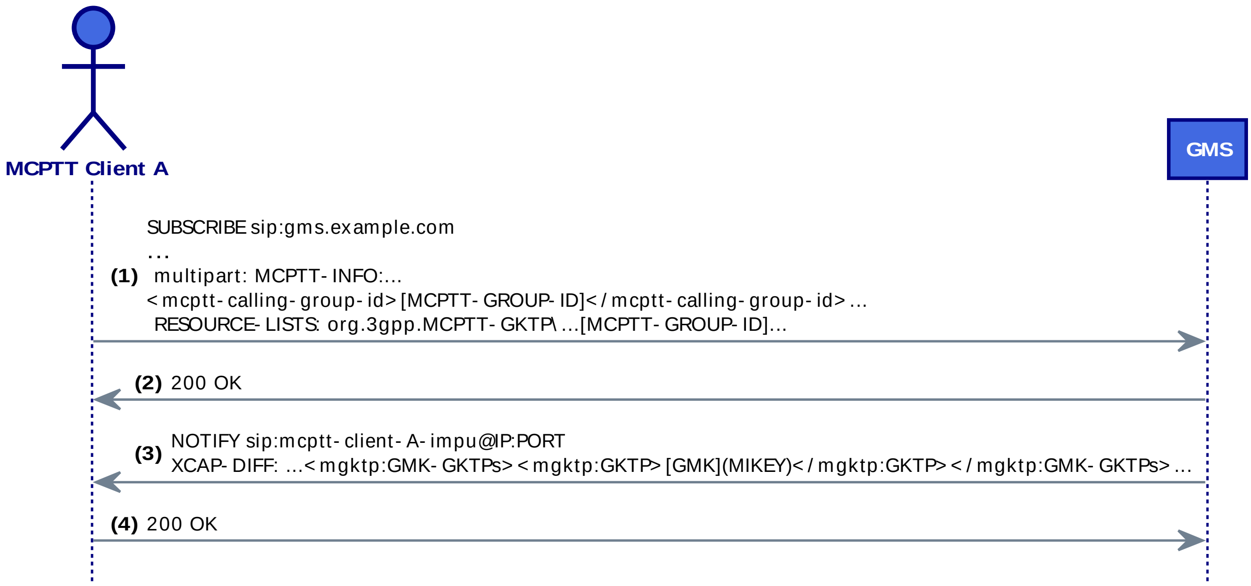

Figure 108: SEC/KEYDIST/GMK/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 116: SEC/KEYDIST/GMK/01 ITD

	Interoperability Test Description		
Identifier	SEC/KEYDIST/GMK/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and GMK distribution		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9] and ETSI TS 124 481 [11])		
Applicability	• MCPTT-Client_KMS, MCPTT-Client_ONN-MCPTT-CALL (clause 6.2) • GMS_KMS		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • Client has previously obtained key material from KMS • GMS has previously obtained key material from KMS		
Test Sequence	**Step**	**Type**	**Description**
	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

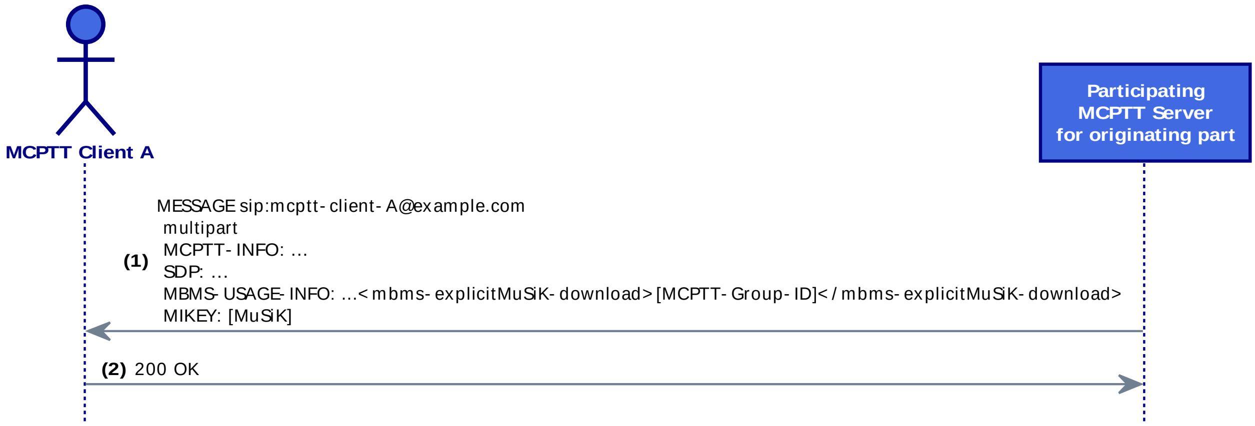

Figure 109: SEC/KEYDIST/MUSIK/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 117: SEC/KEYDIST/MUSIK/01 ITD

Interoperability Test Description			
Identifier	SEC/KEYDIST/MUSIK/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MuSiK distribution		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_KMS, MCPTT-Client_EMBMS • MCPTT-Client_ONNMCPTT-CALL (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_GCSE (clause 6.7) • BM-SC_GCSE • EPS_EMBMS		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • Client has previously obtained key material from KMS • MCPTT server has previously obtained key material from KMS		
Test Sequence	**Step**	**Type**	**Description**
	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 I_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

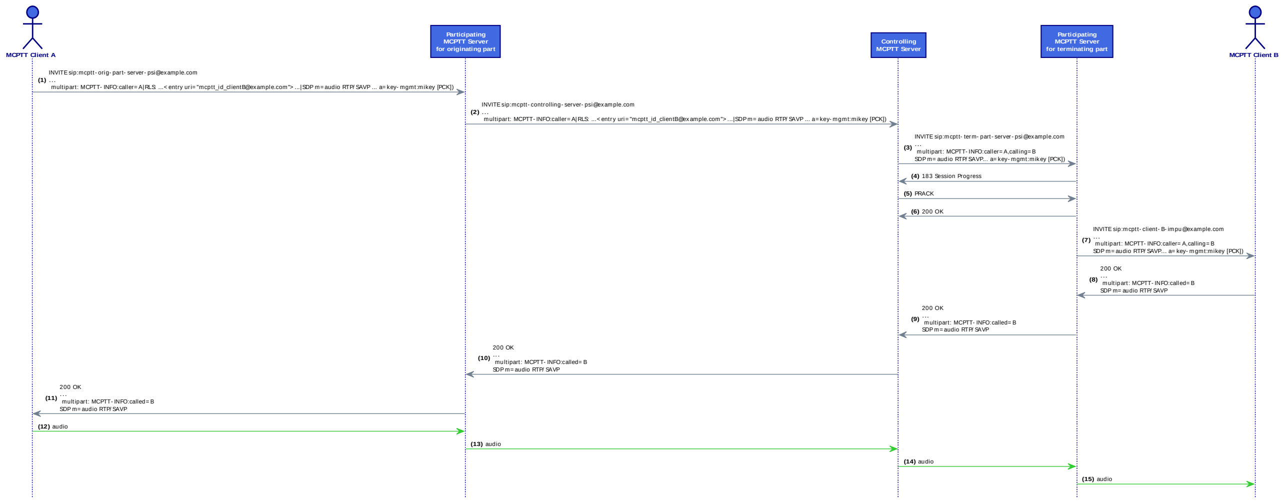

Figure 110: SEC/ENCRYPTION/PRIVATE/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 118: SEC/ENCRYPTION/PRIVATE/01 ITD

Interoperability Test Description			
Identifier	SEC/ENCRYPTION/PRIVATE/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, private call MCPTT signalling protection and RTP/RTCP encryption		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_KMS, MCPTT-Client_ONN-MCPTT-CALL • MCPTTClient_AMR-WB, MCPTT-Client_MCPTT-FC • MCPTT-Client_ONNSEC-XML, MCPTT-Client, ONN-SEC-MEDIA (clause 6.2) • MCPTT-Part_KMS, MCPTT-Part_ONN-MCPTT-CALL • MCPTTPart_MCPTT-FC, MCPTT-Part_ONN-SEC-XML • MCPTT-Part_ONNSEC-MEDIA (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_ONN-SEC-XML • MCPTT-Ctrl_ONN-SEC-MEDIA (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • XML protection and RTP/RTCP protection has been configured in the system • CSK keys have been distributed to participating servers • SPK keys have been configured per server pairs		
Test Sequence	**Step**	**Type**	**Description**
	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

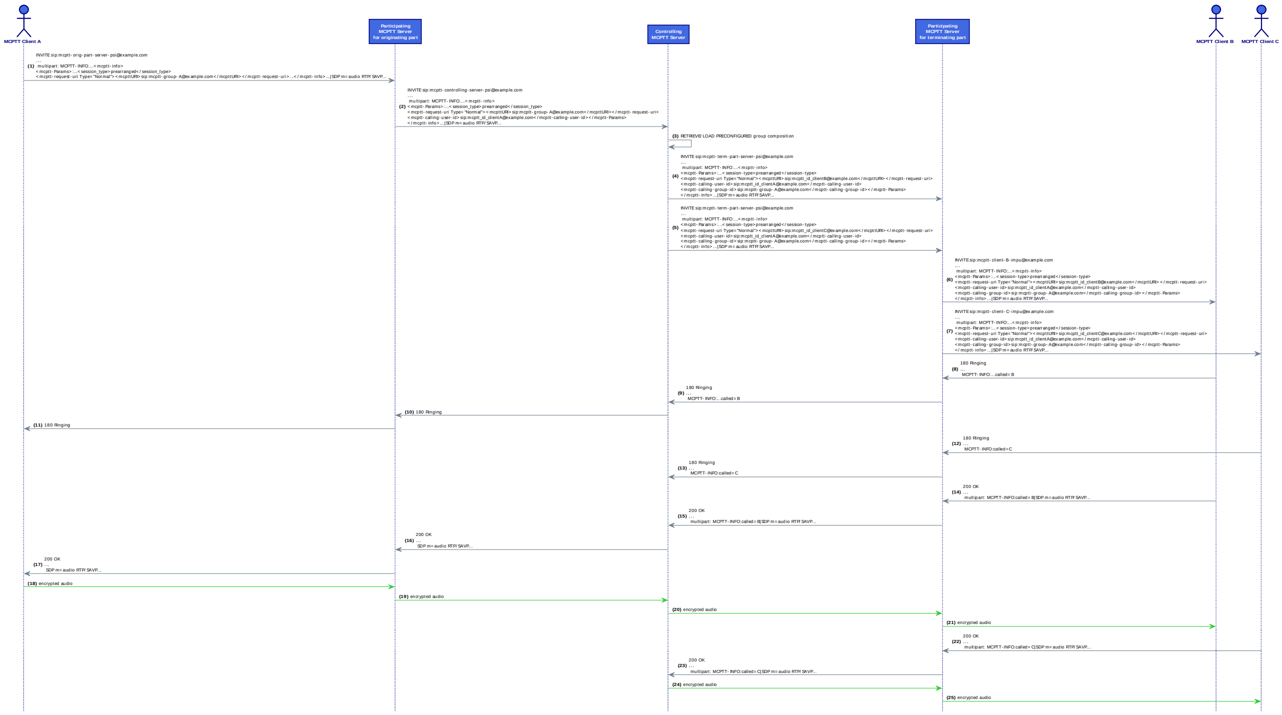

Figure 111: SEC/ENCRYPTION/GROUP/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 119: SEC/ENCRYPTION/GROUP/01 ITD

Interoperability Test Description			
Identifier	SEC/ENCRYPTION/GROUP/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling, group call MCPTT signalling protection and RTP/RTCP encryption		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC • MCPTTClient_ONN-SEC-XML, MCPTT-Client, ONN-SEC-MEDIA (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTTPart_MCPTT-FC, MCPTT-Part_ONN-SEC-XML • MCPTT-Part_ONNSEC-MEDIA (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL • MCPTTCtrl_ONN-SEC-XML, MCPTT-Ctrl_ONN-SEC-MEDIA (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • XML protection and RTP/RTCP protection has been configured in the system • GMK keys have been distributed to the clients • CSK keys have been distributed to participating servers • SPK keys have been configured per server pairs		
Test Sequence	**Step**	**Type**	**Description**
	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

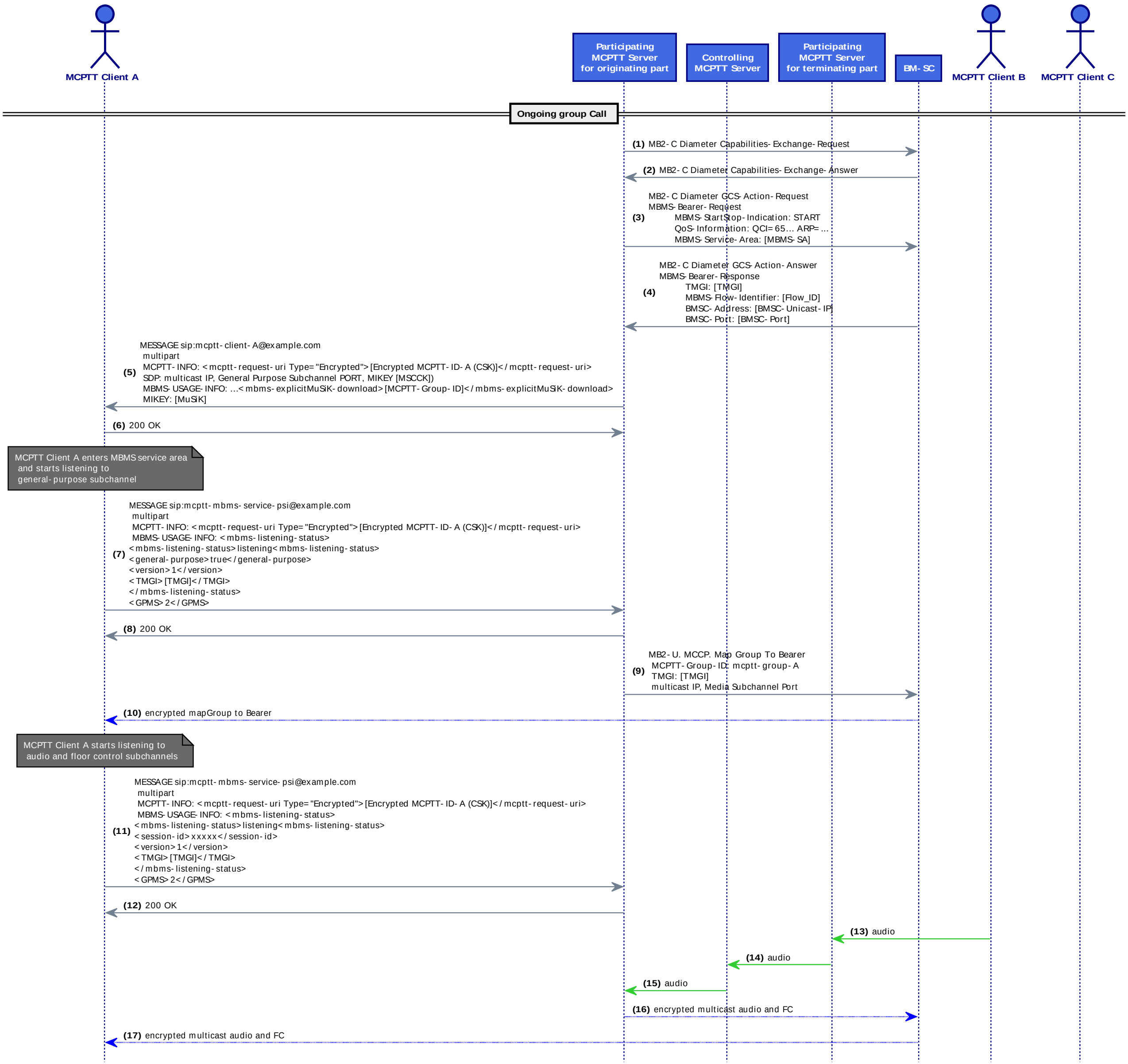

Figure 112: SEC/ENCRYPTION/GROUPEMBMS/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 120: SEC/ENCRYPTION/GROUPEMBMS/01 ITD

Interoperability Test Description			
Identifier	SEC/ENCRYPTION/GROUPEMBMS/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC • MCPTTClient_ONN-SEC-XML, MCPTT-Client, ONN-SEC-MEDIA (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTTPart_MCPTT-FC, MCPTT-Part_ONN-SEC-XML • MCPTT-Part_ONNSEC-MEDIA • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.7) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL • MCPTTCtrl_ONN-SEC-XML, MCPTT-Ctrl_ONN-SEC-MEDIA (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • Ongoing prearranged group call • XML protection and RTP/RTCP protection has been configured in the system • GMK keys have been distributed to the clients • CSK keys have been distributed to participating servers • SPK keys have been configured per server pairs		
Test Sequence	**Step**	**Type**	**Description**
	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

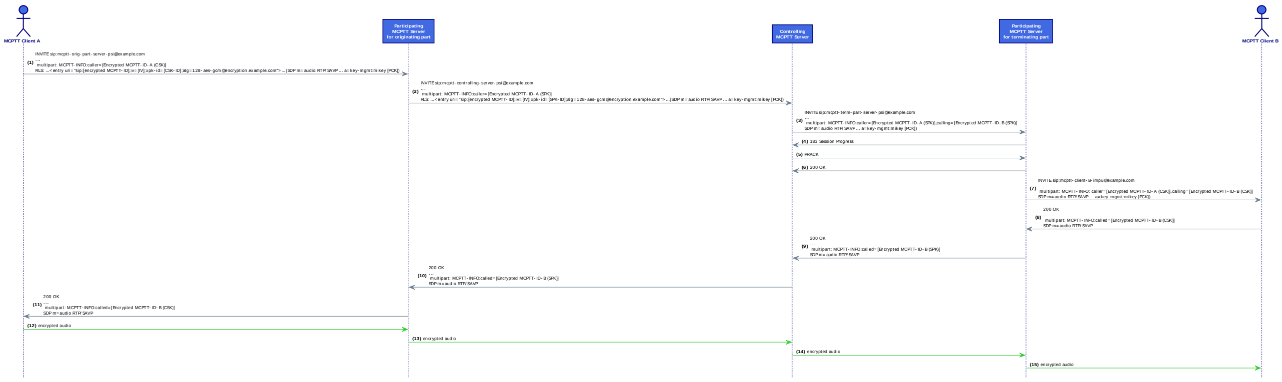

Figure 113: SEC/XMLENCRYPT/PRIVATE/01 Message Sequence

Message Details

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Trace Pending
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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)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL • MCPTT-Client_ONN-SEC-XML, MCPTT-Client_KMS (clause 6.2) • MCPTT-Part_AFFIL, MCPTT-Part_ONN-SEC-XML (clause 6.7) • MCPTT-Ctrl_AFFIL, MCPTT-Ctrl_ONN-SEC-XML (clause 6.8)
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Client has previously obtained key material from KMS • Client's CSK has been already sent to the participating server • Shared SPK key has been already configured in servers • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id

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

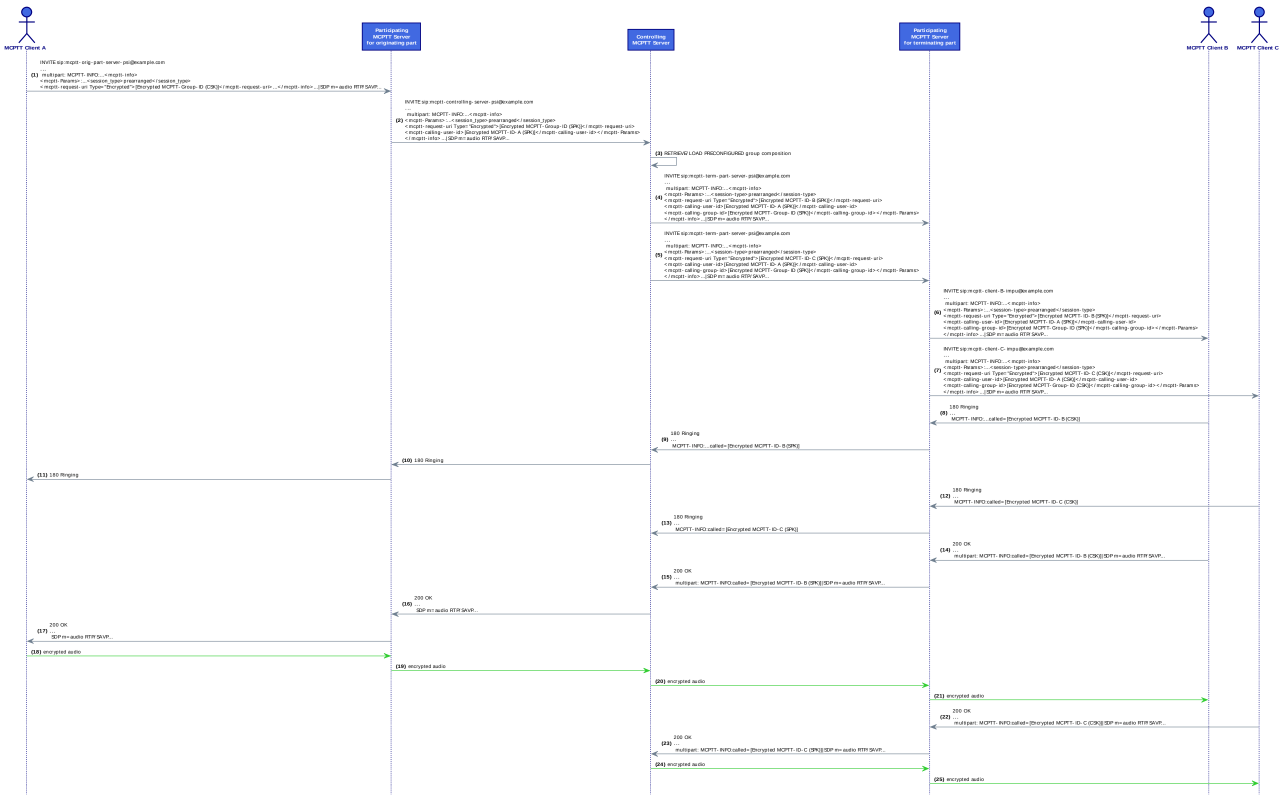

Figure 114: SEC/XMLENCRYPT/GROUP/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 122: SEC/XMLENCRYPT/GROUP/01 ITD

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">SEC/XMLENCRYPT/GROUP/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC
• MCPTTClient_ONN-SEC-XML, MCPTT-Client_KMS(clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL
• MCPTTPart_MCPTT-FC, MCPTT-Part_ONN-SEC-XML (clause 6.7)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL
• MCPTTCtrl_ONN-SEC-XML (clause 6.8)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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
• Client has previously obtained key material from KMS
• Client's CSK has been already sent to the participating server
• Shared SPK key has been already configured in servers
• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="13">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>User 1 (mcptt_id_clientA@example.com) calls mcptt-group-A</td></tr>
<tr><td>2</td><td>check</td><td>Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example.com after traversing SIP core/IMS</td></tr>
<tr><td>3</td><td>check</td><td>XML contents in mcptt-info body are encrypted with CSK</td></tr>
<tr><td>4</td><td>check</td><td>INVITE received at the MCPTT controlling server</td></tr>
<tr><td>5</td><td>check</td><td>XML contents in mcptt-info body are encrypted with SPK</td></tr>
<tr><td>6</td><td>check</td><td>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</td></tr>
<tr><td>7</td><td>check</td><td>"n" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)</td></tr>
<tr><td>8</td><td>check</td><td>XML contents in mcptt-info body are encrypted with SPK</td></tr>
<tr><td>9</td><td>check</td><td>"n" INVITEs received at the affiliated mcptt_id_clientX</td></tr>
<tr><td>10</td><td>check</td><td>XML contents in mcptt-info body are encrypted with CSK</td></tr>
<tr><td>11</td><td>check</td><td>"n" SIP dialogs established</td></tr>
<tr><td>12</td><td>verify</td><td>Call connected and multiple media flows exchanged</td></tr>
</table>

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

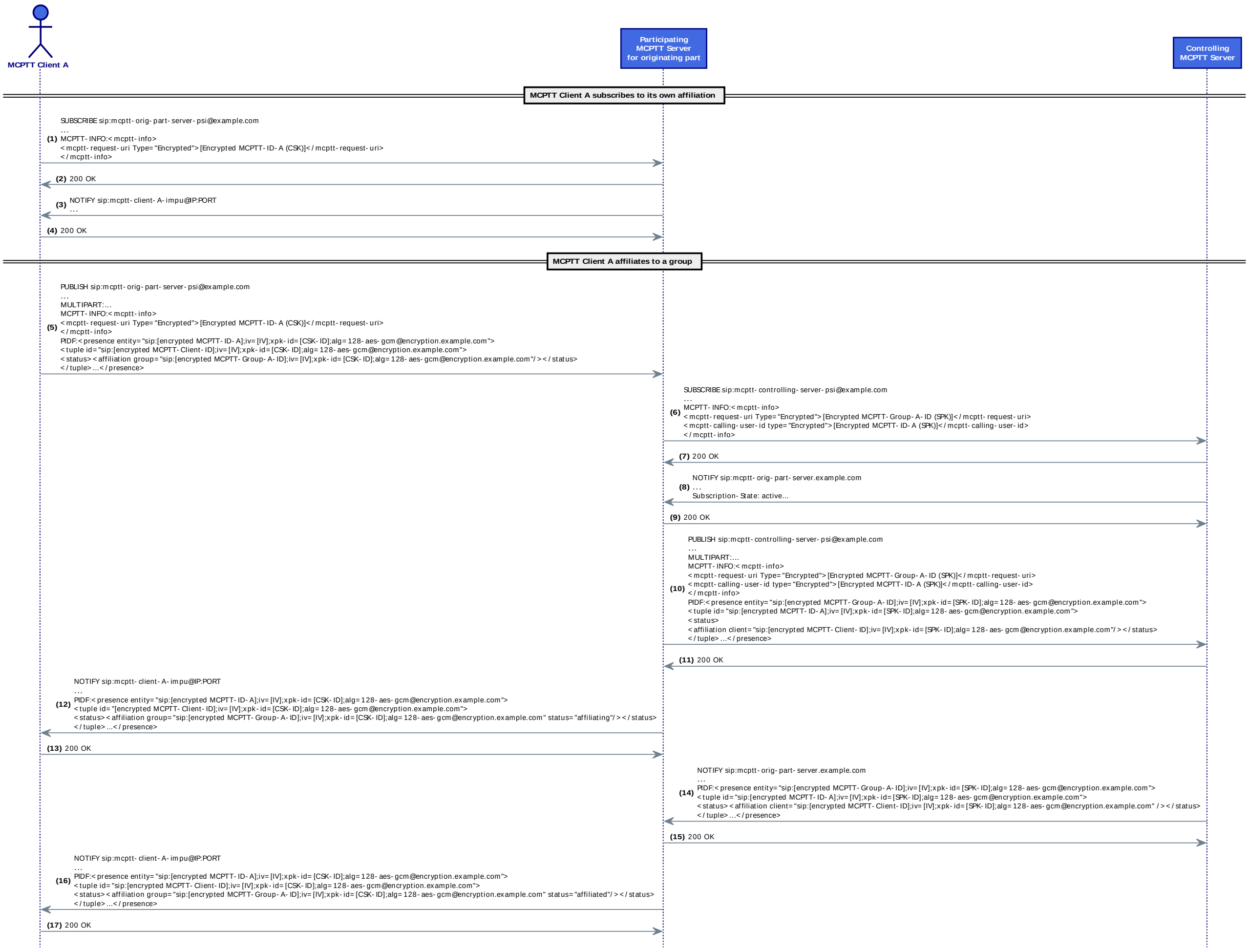

Figure 115: SEC/XMLENCRYPT/AFFIL/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 123: SEC/XMLENCRYPT/AFFIL/01 ITD

Interoperability Test Description	
Identifier	SEC/XMLENCRYPT/AFFIL/01
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and XML encryption
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AFFIL • MCPTT-Client_ONN-SEC-XML, MCPTT-Client_KMS (clause 6.2) • MCPTT-Part_AFFIL, MCPTT-Part_ONN-SEC-XML (clause 6.7) • MCPTT-Ctrl_AFFIL, MCPTT-Ctrl_ONN-SEC-XML (clause 6.8)

Interoperability Test Description			
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Client has previously obtained key material from KMS • Client's CSK has been already sent to the participating server • Shared SPK key has been already configured in servers • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	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

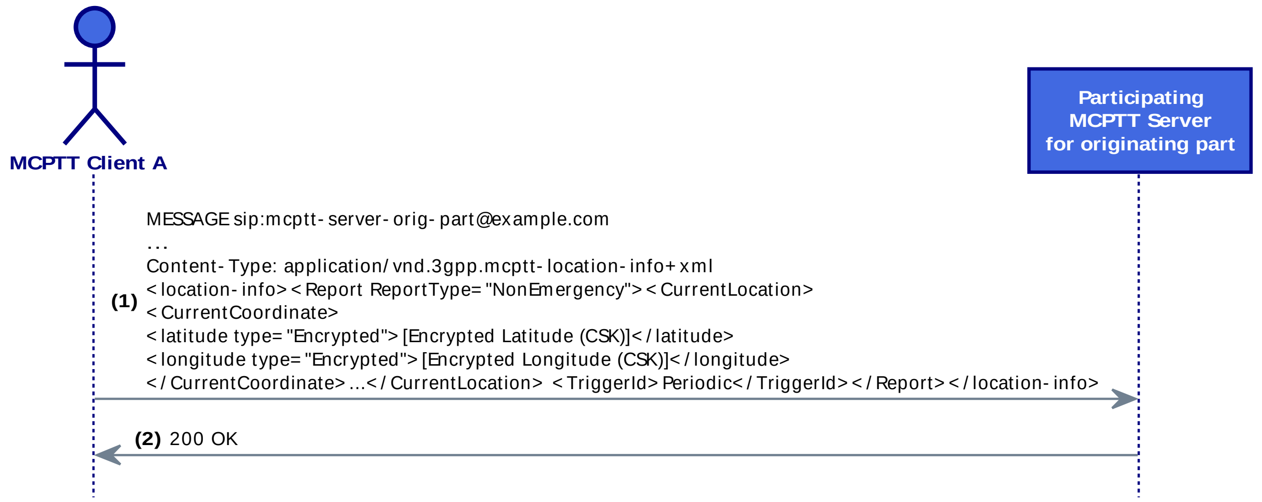

Figure 116: SEC/XMLENCRYPT/LOC/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 124: SEC/XMLENCRYPT/LOC/01 ITD

	Interoperability Test Description		
Identifier	SEC/XMLENCRYPT/LOC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and XML encryption		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_LOC, MCPTT-Client_ONN-SEC-XML, MCPTTClient_KMS • MCPTT-Part_LOC, MCPTT-Part_ONN-SEC-XML (clause 6.7)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers • MCPTT Client Location reporting mechanism properly configured • Client has previously obtained key material from KMS		
Test Sequence	**Step**	**Type**	**Description**
	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

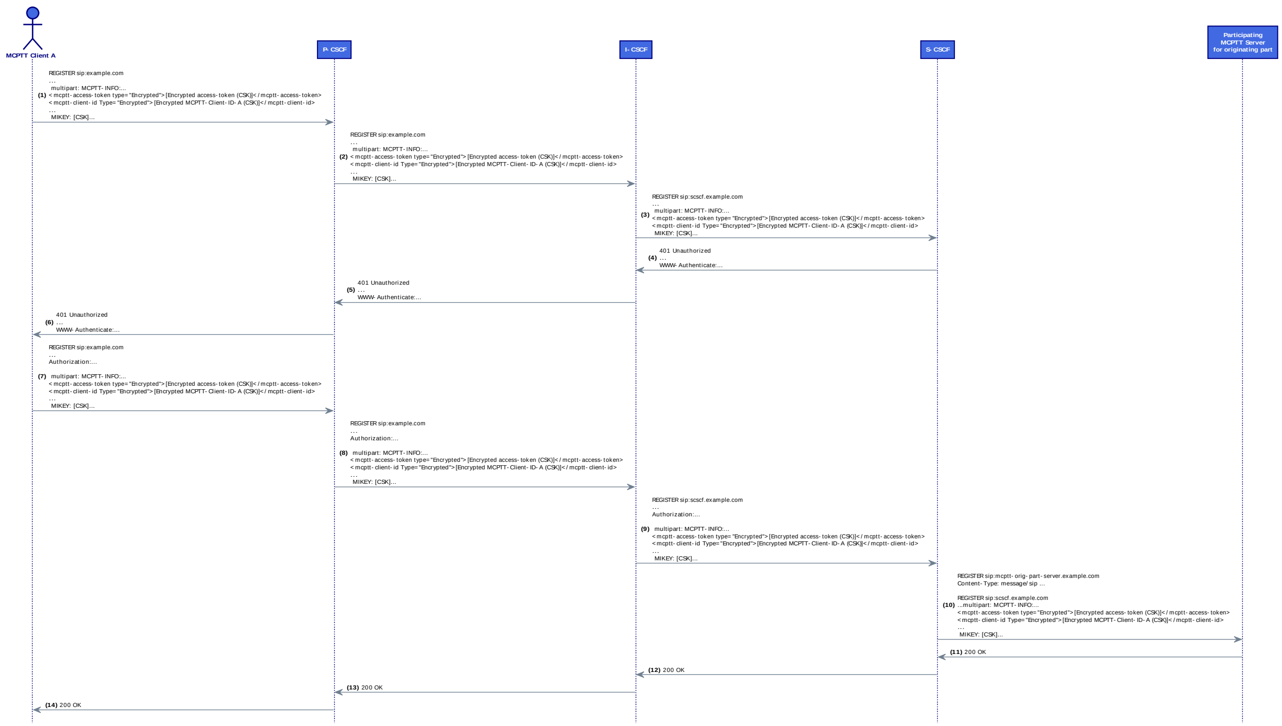

Figure 117: SEC/XMLENCRYPT/REGAUTH/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 125: SEC/XMLENCRYPT/REGAUTH/01 ITD

Interoperability Test Description			
Identifier	SEC/XMLENCRYPT/REGAUTH/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, 3rd party registration to the MCPTT Participating and XML encryption		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_REGREG • MCPTT-Client_ONN-SEC-XML, MCPTT-Client_KMS • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_REGAUTH • MCPTTPart_ONN-SEC-XML • IMS_3RDPARTYREGISTER		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers • 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		
Test Sequence	**Step**	**Type**	**Description**
	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 3rd 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: Since MCVideo Transmission Control protocol uses binary RTCP-based signalling, in the following sequence diagrams and message details the decoded meaning of (some of) the selected values for different meaning fields are displayed.

Message Sequence Diagram

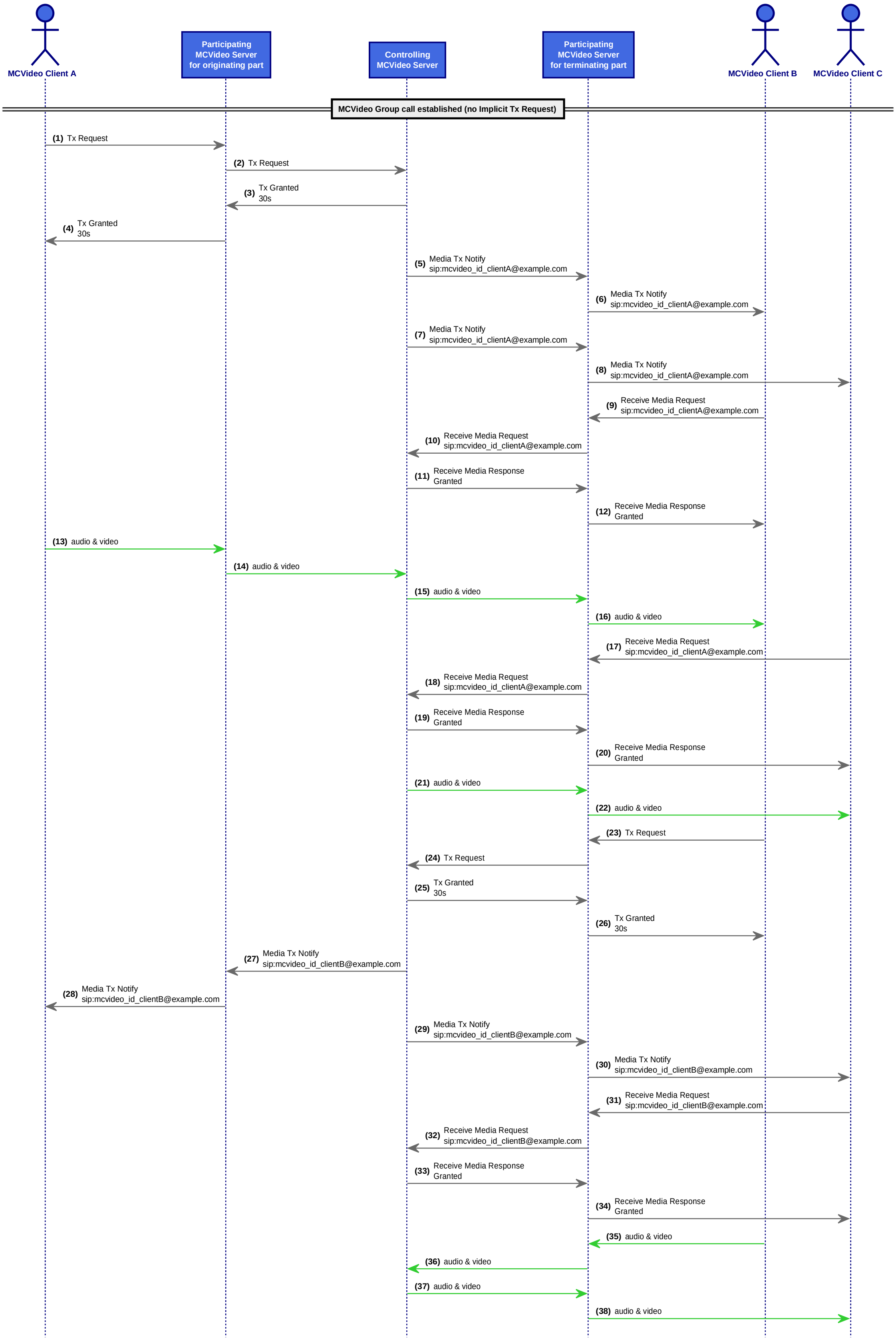

Figure 118: TC/BASIC/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 126: TC/BASIC/01 ITD

Interoperability Test Description			
Identifier	TC/BASIC/01		
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)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • MCVideo TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_ONN-MCVideo-TC (clause 6.5) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC • MCVideo-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCVideo-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.11) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_ONN-MCVideo-TC (clause 6.12)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • UEs properly registered to the SIP core/IMS and MCVideo system • On-demand pre-arranged MCVideo Group Call properly established and in Transmission-Idle state		
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

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

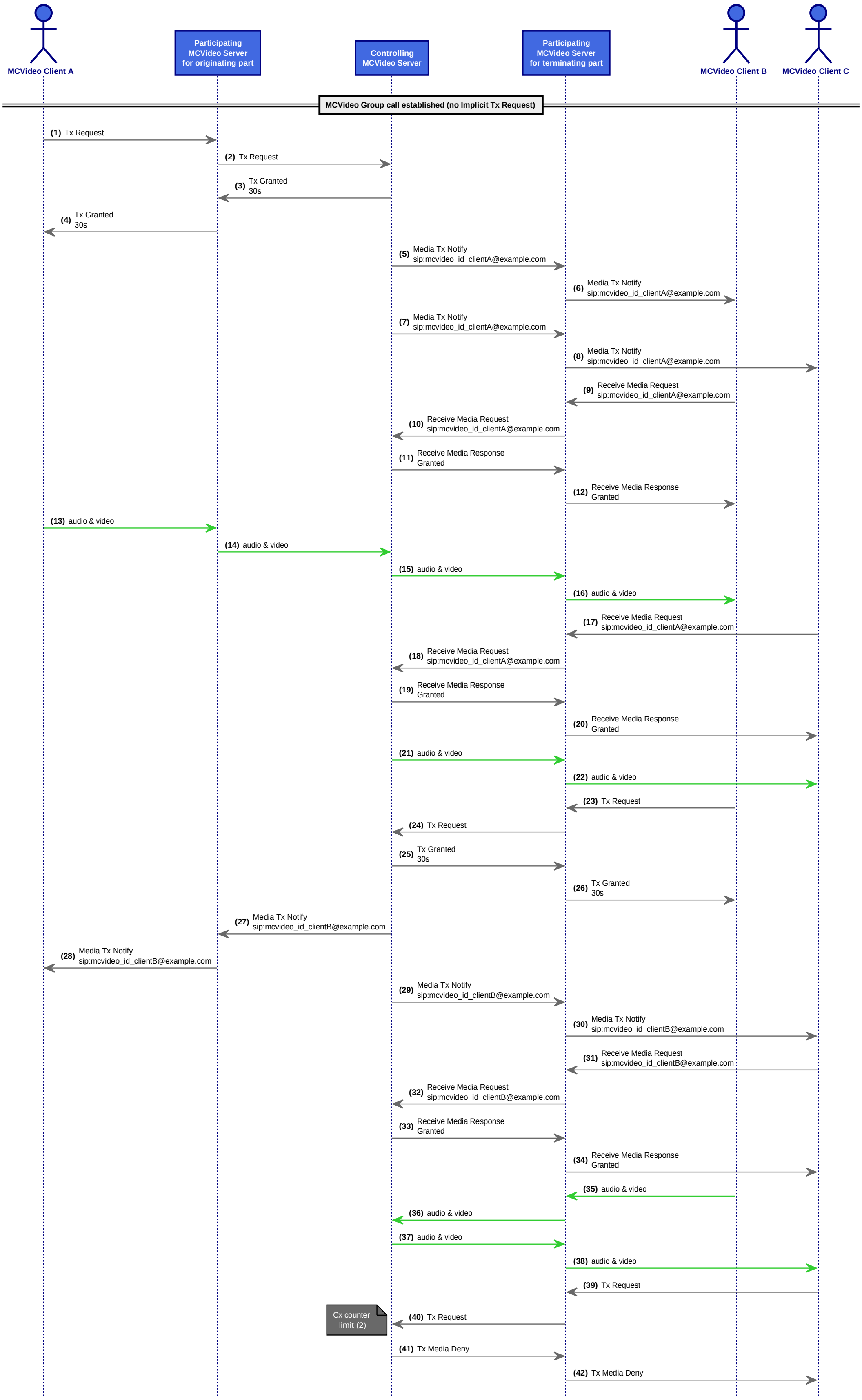

Figure 119: TC/BASIC/02 Message Sequence

Message Details

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Trace Pending
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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)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • MCVideo TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_ONN-MCVideo-TC (clause 6.5) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC • MCVideo-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCVideo-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.11) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_ONN-MCVideo-TC (clause 6.12)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • UEs properly registered to the SIP core/IMS and MCVideo system • On-demand pre-arranged MCVideo Group Call properly established and in Transmission-Idle state		
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

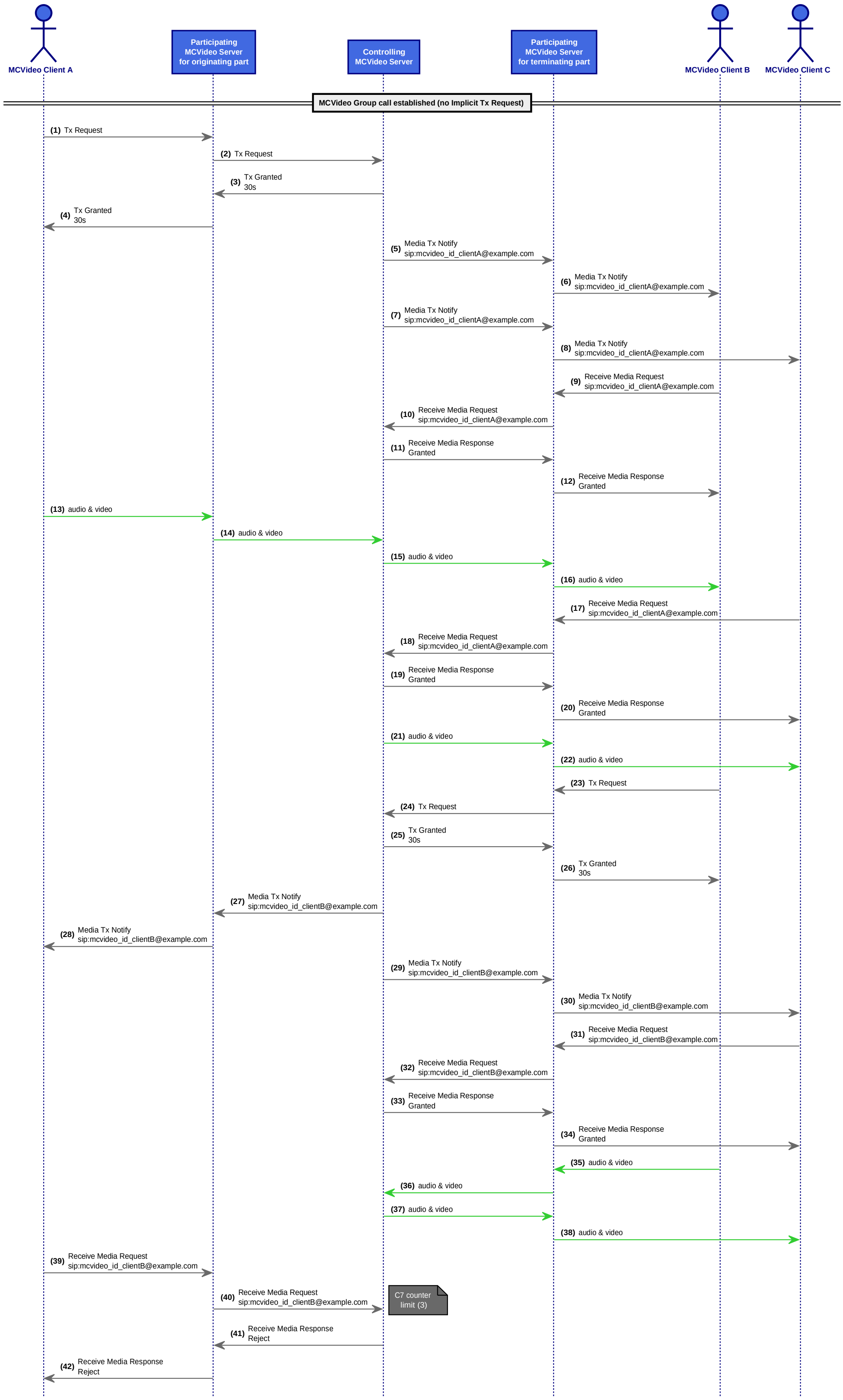

Figure 120: TC/BASIC/03 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 128: TC/BASIC/03 ITD

Interoperability Test Description			
Identifier	TC/BASIC/03		
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)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • MCVideo TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_ONN-MCVideo-TC (clause 6.5) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC • MCVideo-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCVideo-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.11) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_ONN-MCVideo-TC (clause 6.12)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • UEs properly registered to the SIP core/IMS and MCVideo system • On-demand pre-arranged MCVideo Group Call properly established and in Transmission-Idle state		
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	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

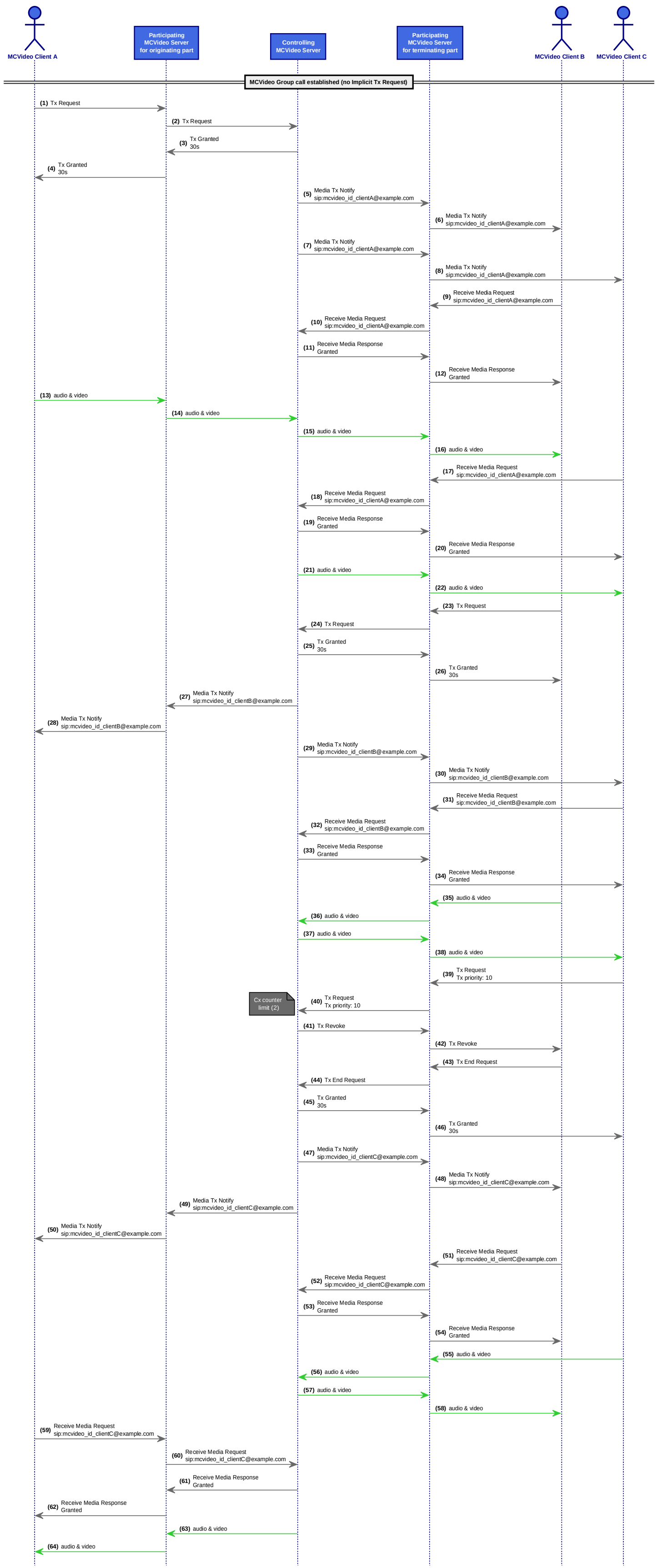

Figure 120a: TC/BASIC/04 Message Sequence

Message Details

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Trace pending
```

Interoperability Test Description

Table 128a: TC/BASIC/04 ITD

Interoperability Test Description	
Identifier	TC/BASIC/04
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCVideo Transmission Controlling capabilities in Clients and controlling
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • UEs properly registered to the SIP core/IMS and MCVideo system • On-demand pre-arranged Group Call properly established and in TM-Idle state

Interoperability Test Description			
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 GMS 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

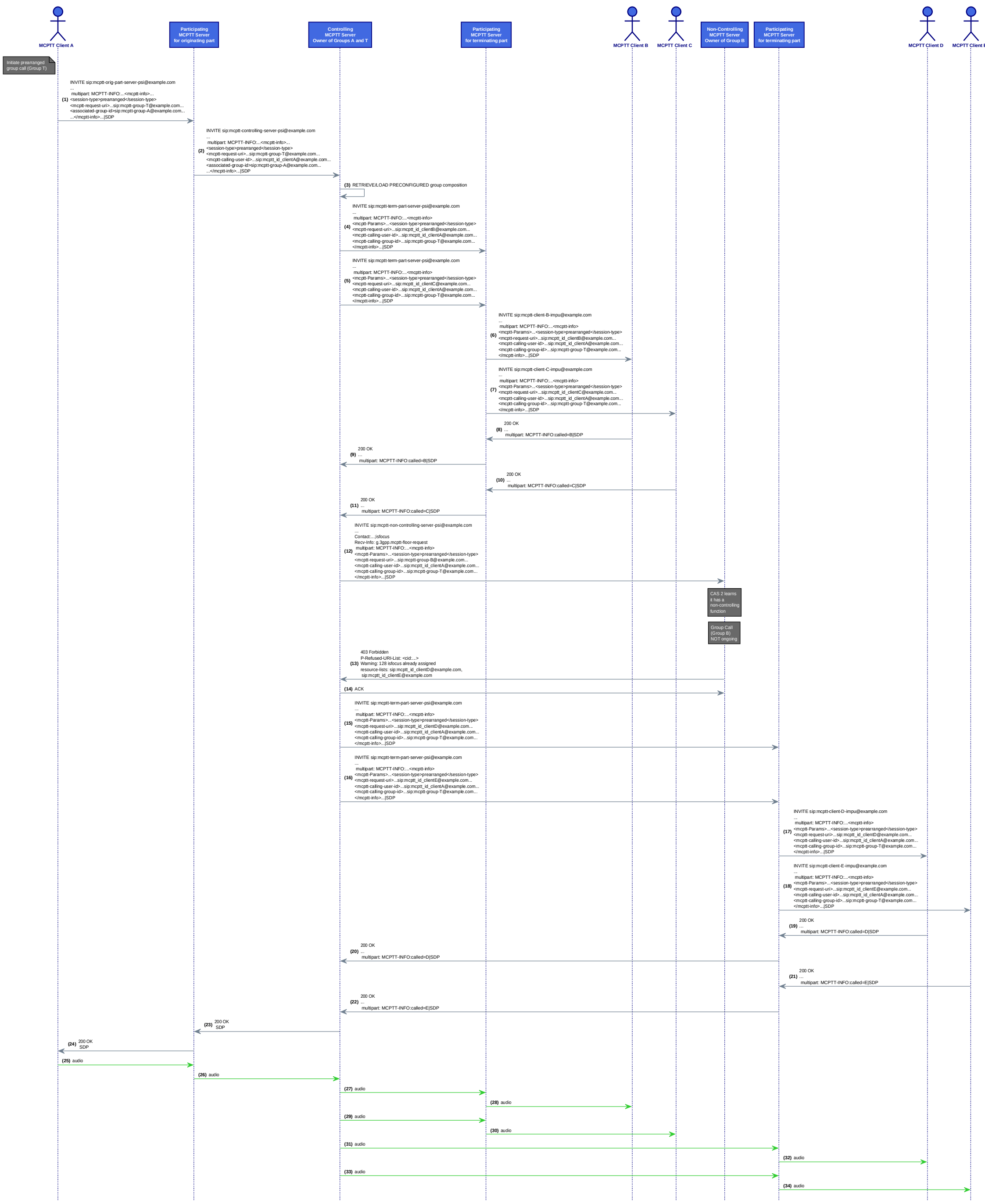

Figure 121: S2S/ONN/GROUP/PREA/ONDEM/TEMP/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 129: S2S/ONN/GROUP/PREA/ONDEM/TEMP/01 ITD

Interoperability Test Description			
Identifier	S2S/ONN/GROUP/PREA/ONDEM/TEMP/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT controlling and non-controlling capabilities in MCPTT servers		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Group re-grouping procedure already finished for the temporary group • Calling user is affiliated to the called group • Trusted relationship exists between partner systems		
Test Sequence	**Step**	**Type**	**Description**
	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

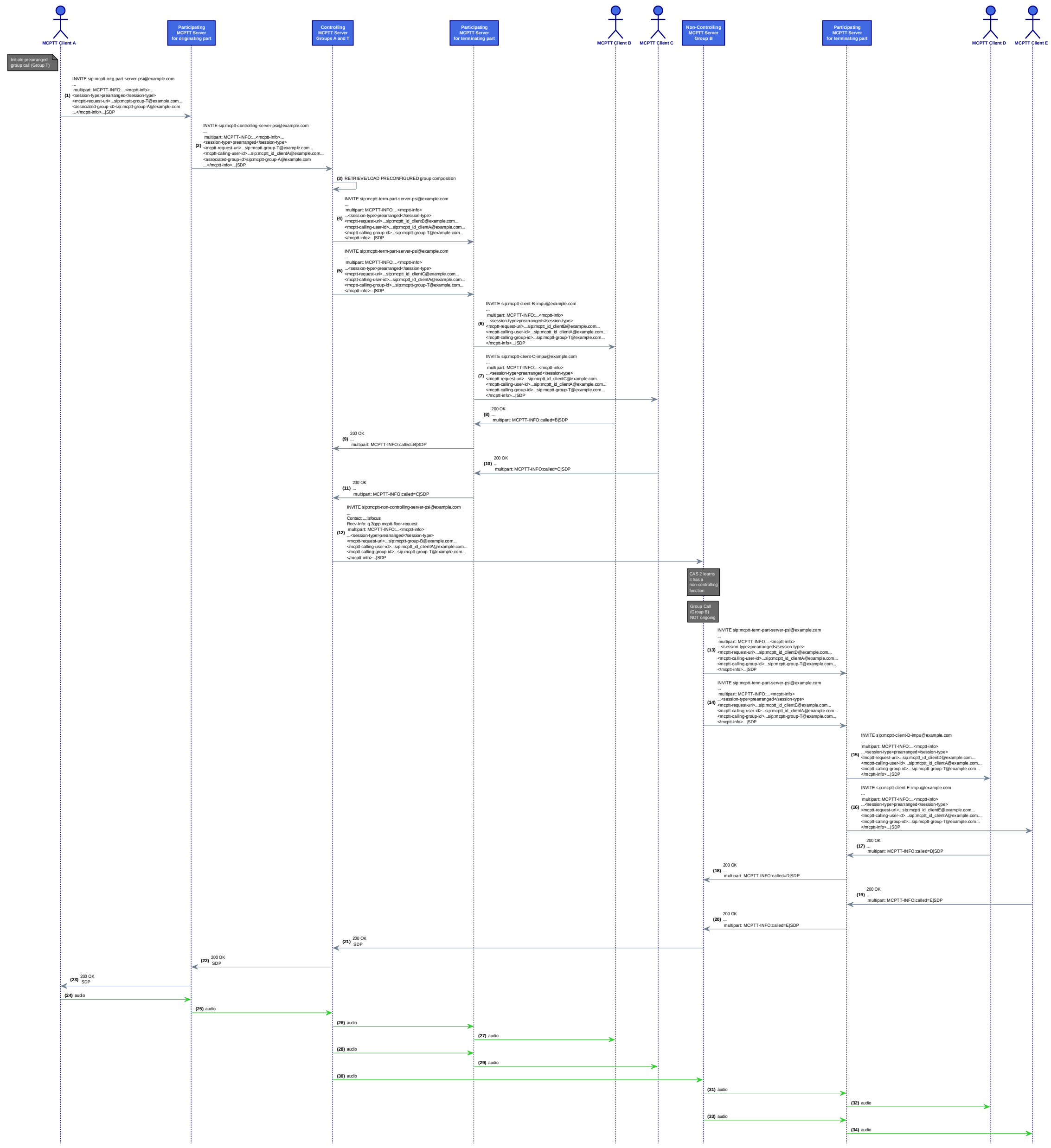

Figure 122: ONN/GROUP/PREA/ONDEM/TEMP/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 130: ONN/GROUP/PREA/ONDEM/TEMP/02 ITD

Interoperability Test Description			
Identifier	ONN/GROUP/PREA/ONDEM/TEMP/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and MCPTT controlling and non-controlling capabilities in MCPTT servers		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Group re-grouping procedure already finished for the temporary group • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	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/pidf+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/pidf+xml MIME body indicating per-user functional alias information, constructed according to IETF RFC 3863 [43].

b) The application/pidf+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/pidf+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 is 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

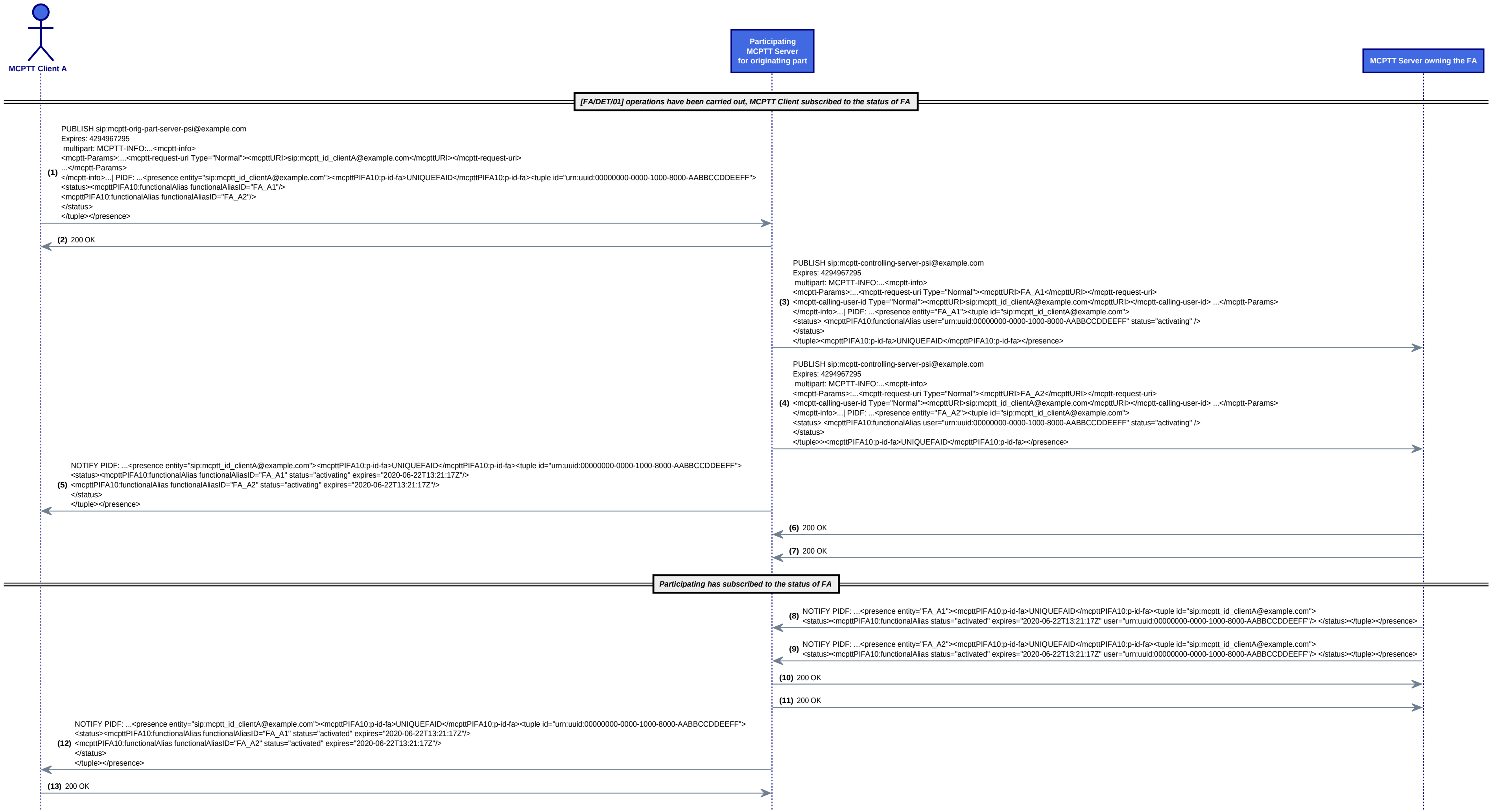

Figure 122a: FA/CHANGE/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 130a: FA/CHANGE/01 ITD

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">FA/CHANGE/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, successful initial activation of two Functional Alias</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL
• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td></td><td>1</td><td>stimulus</td><td>User 1 (mcptt_id_clientA@example.com) requests the activation of two functional alias FA_A1 and FA_A2</td></tr>
<tr><td></td><td>2</td><td>check</td><td>SIP PUBLISH with mcptt-info and pidf+xml MIMEs sent to the originating participating</td></tr>
<tr><td></td><td>3</td><td>check</td><td>Participating acknowledges (200 OK) the reception of the PUBLISH</td></tr>
<tr><td></td><td>4</td><td>check</td><td>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</td></tr>
<tr><td></td><td>5</td><td>check</td><td>The controlling updates the FA status and notifies back</td></tr>
<tr><td></td><td>6</td><td>verify</td><td>Client gets the notification of the successful activation of the FAs and related Expire times</td></tr>
</table>

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 an 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

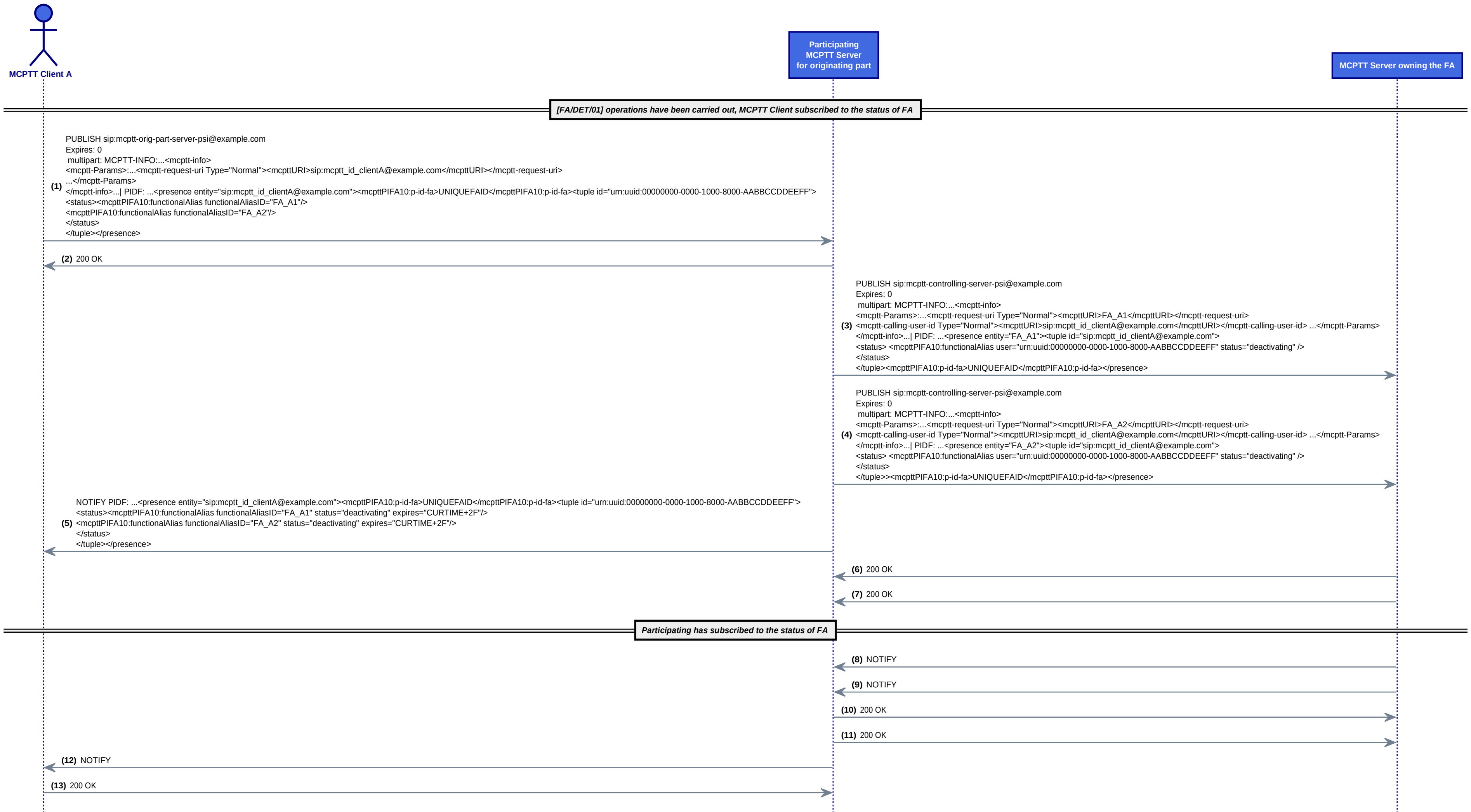

Figure 122b: FA/CHANGE/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 130b: FA/CHANGE/02 ITD

Interoperability Test Description			
Identifier	FA/CHANGE/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, deactivation of two Functional Aliases		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Client has previously activated FA_A1 and FA_A2		
Test Sequence	**Step**	**Type**	**Description**
	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 pidf+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

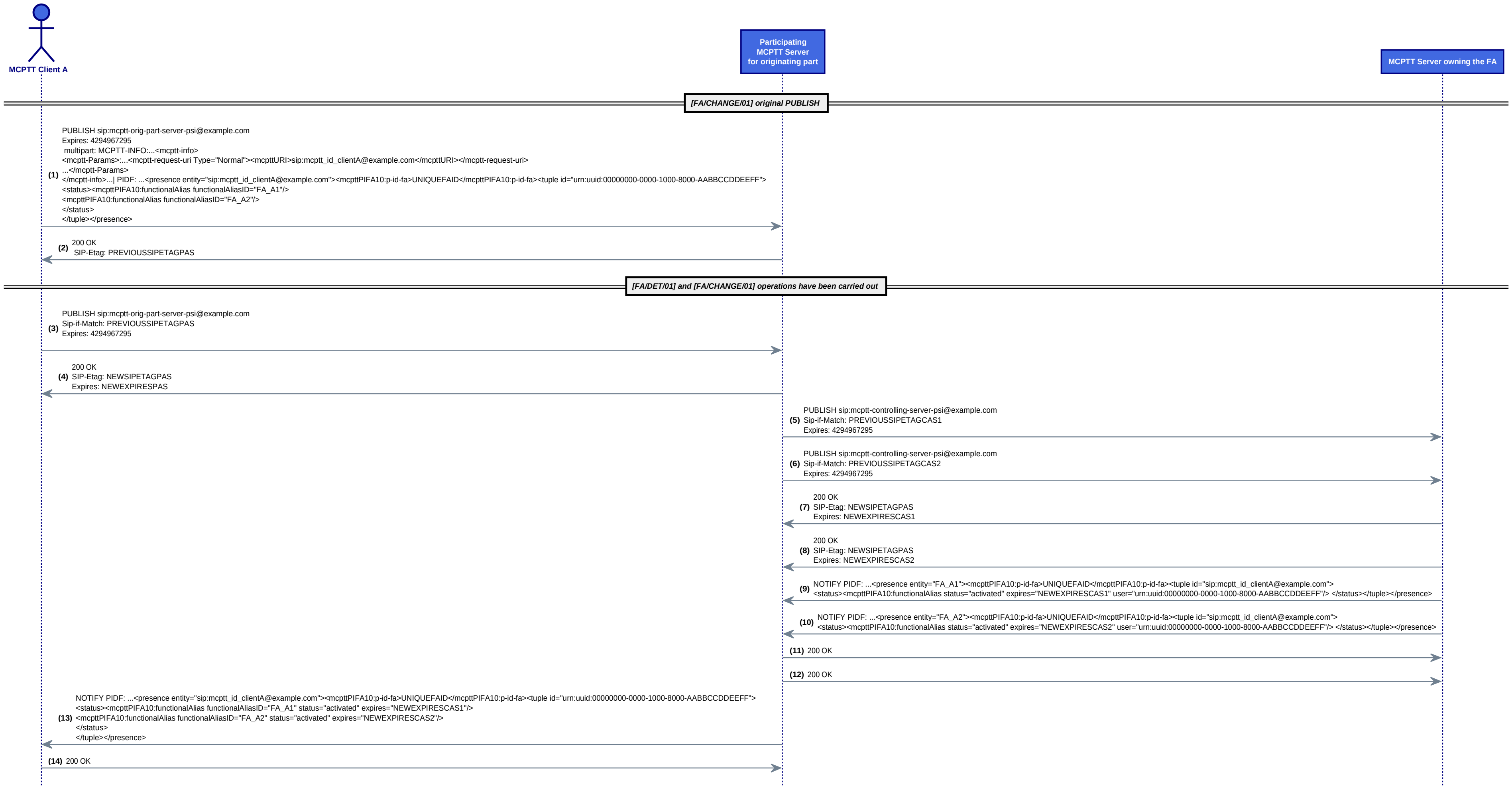

Figure 122c: FA/CHANGE/03 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 130c: FA/CHANGE/03 ITD

Interoperability Test Description			
Identifier	FA/CHANGE/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, successful initial activation of two Functional Aliases		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Client has previously activated FA_A1 and FA_A2		
Test Sequence	**Step**	**Type**	**Description**
	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/pidf+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/pidf+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

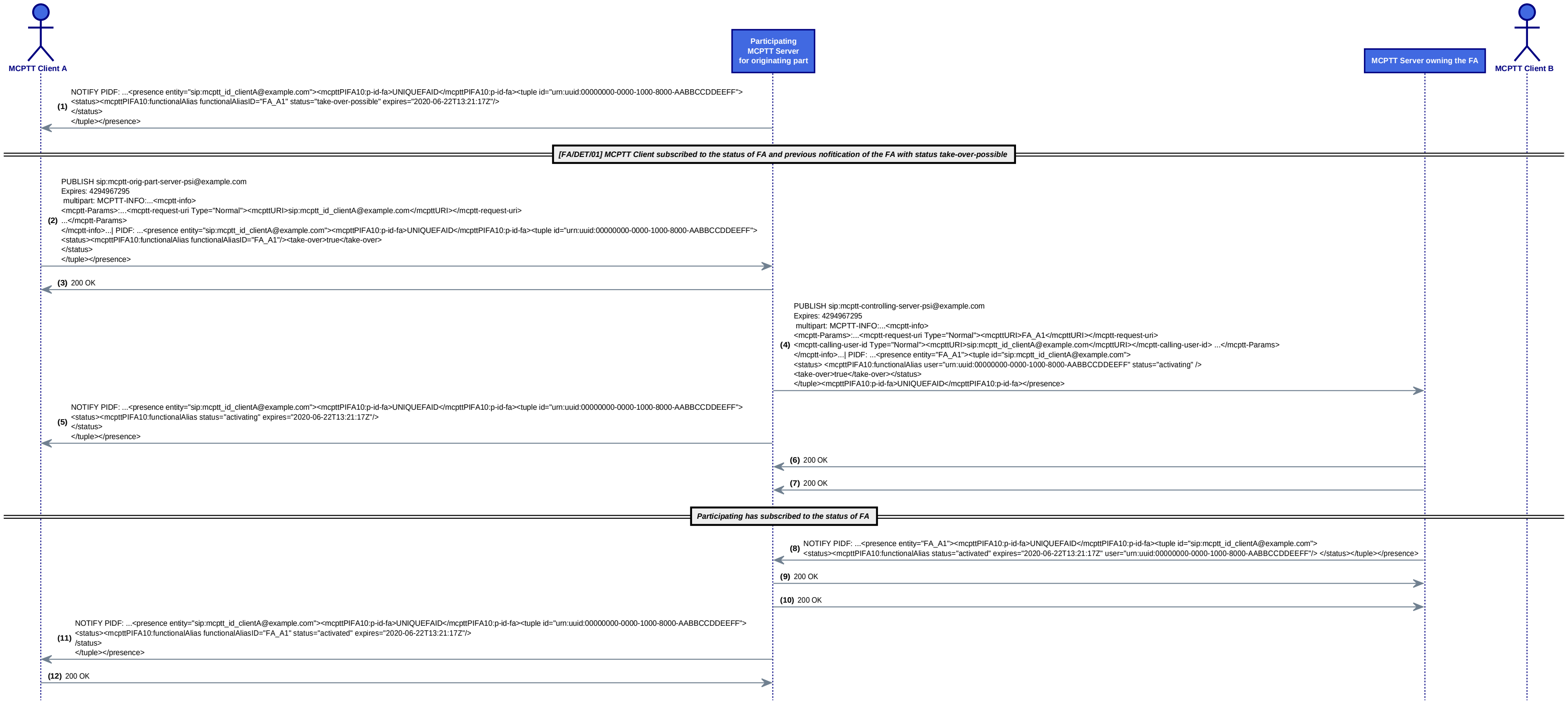

Figure 122d: FA/CHANGE/04 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 130d: FA/CHANGE/04 ITD

Interoperability Test Description			
Identifier	FA/CHANGE/04		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, successful take-over of a functional alias		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9)		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Previous notification of functional alias with status take-over-possible		
Test Sequence	**Step**	**Type**	**Description**
	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 pidf+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 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, 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: 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 ETSI TS 124 229 [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

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Trace Pending
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Interoperability Test Description

Table 130e: FA/DET/01 ITD

Interoperability Test Description			
Identifier	FA/DET/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, determination of the Functional Aliases activated for the requesting User		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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

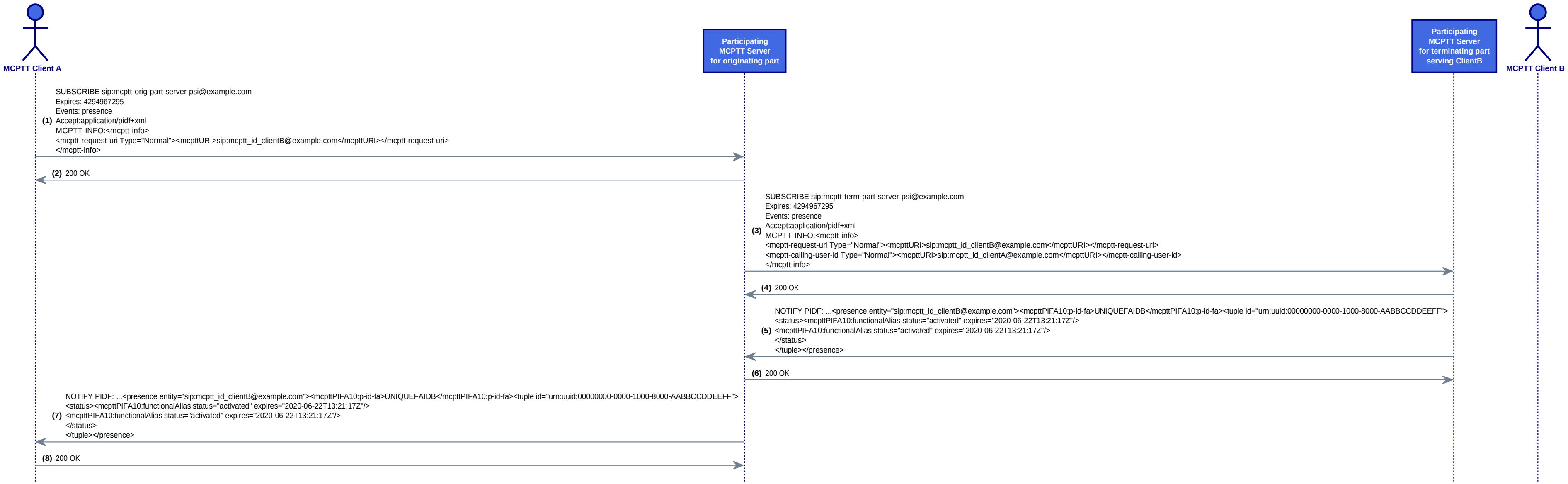

Figure 122f: FA/DET/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 130f: FA/DET/02 ITD

Interoperability Test Description			
Identifier	FA/DET/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, determination of the Functional Aliases activated for another User		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	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

7.13.9 MCPTT server requests a resolution of the Functional alias from the MCPTT server owning that FA [FA/RESOL/01]

As defined in clause 9A.2.2.2.8 in ETSI TS 124 379 [9] in order to discover the MCPTT users that have successfully activated a handled functional alias in the MCPTT server owning the functional alias, the MCPTT server shall generate an initial SIP SUBSCRIBE with Request-URI to the public service identity of the controlling MCPTT function associated with the handled functional alias and shall include an application/vnd.3gpp.mcptt-info+xml MIME body with <mcptt-request-uri> element set to the handled functional alias ID and shall include an application/simple-filter+xml MIME body indicating per-functional alias restrictions of presence event package notification information indicating the served functional alias.

Message Sequence Diagram

Figure 122fa: FA/RESOL/01Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 130fa: FA/RESOL/01 ITD

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">FA/RESOL/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, resolution of functional alias from the server owning it</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
• MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9])
• RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL
• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers
• Server is aware of the controlling owning a specific functional alias</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="5">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>Controlling servers wants to resolve the status of a specific functional alias (i.e. which mcptt ids have successfully activated it)</td></tr>
<tr><td>2</td><td>check</td><td>SIP SUBSCRIBE sent to the server owning the FA with the proper MCPTT-INFO and simple filter</td></tr>
<tr><td>3</td><td>check</td><td>Server owning the FA sends NOTIFY</td></tr>
<tr><td>4</td><td>verify</td><td>Controlling server sending the resolution request gets the status of the functional alias</td></tr>
</table>

7.13.10 Automatic deactivation of FA [FA/CHANGE/05]

As defined in clause 9A.2.2.3.6 in ETSI TS 124 379 [9] in order to deactivate a functional alias associated with a target MCPTT ID either 1) externally triggered by an MCPTT administrator by a mechanism outside of the scope of the standard or 2) directly by the MCPTT function owning the functional alias as a result of an internal trigger like the expiration of the functional alias association, the MCPTT server:

1) shall consider a functional alias information entry such that:

   a) the functional alias information entry is in the list of functional alias information entries described in clause 9A.2.2.3.2; and

   b) the functional alias ID of the functional alias information entry is equal to the served functional alias ID;

   as the served functional alias information entry;

2) shall remove the MCPTT user information entry such that:

   a) the MCPTT user information entry is in the list of the MCPTT user information entries of the served functional alias information entry; and

   b) the MCPTT user information entry has the MCPTT ID set to the target MCPTT ID; and

3) shall perform the procedures specified in clause 9A.2.2.3.5 for the served functional alias ID.

Therefore, from a signalling point of view the clients subscribed to the functional alias status will receive the resulting NOTIFY.

Message Sequence Diagram

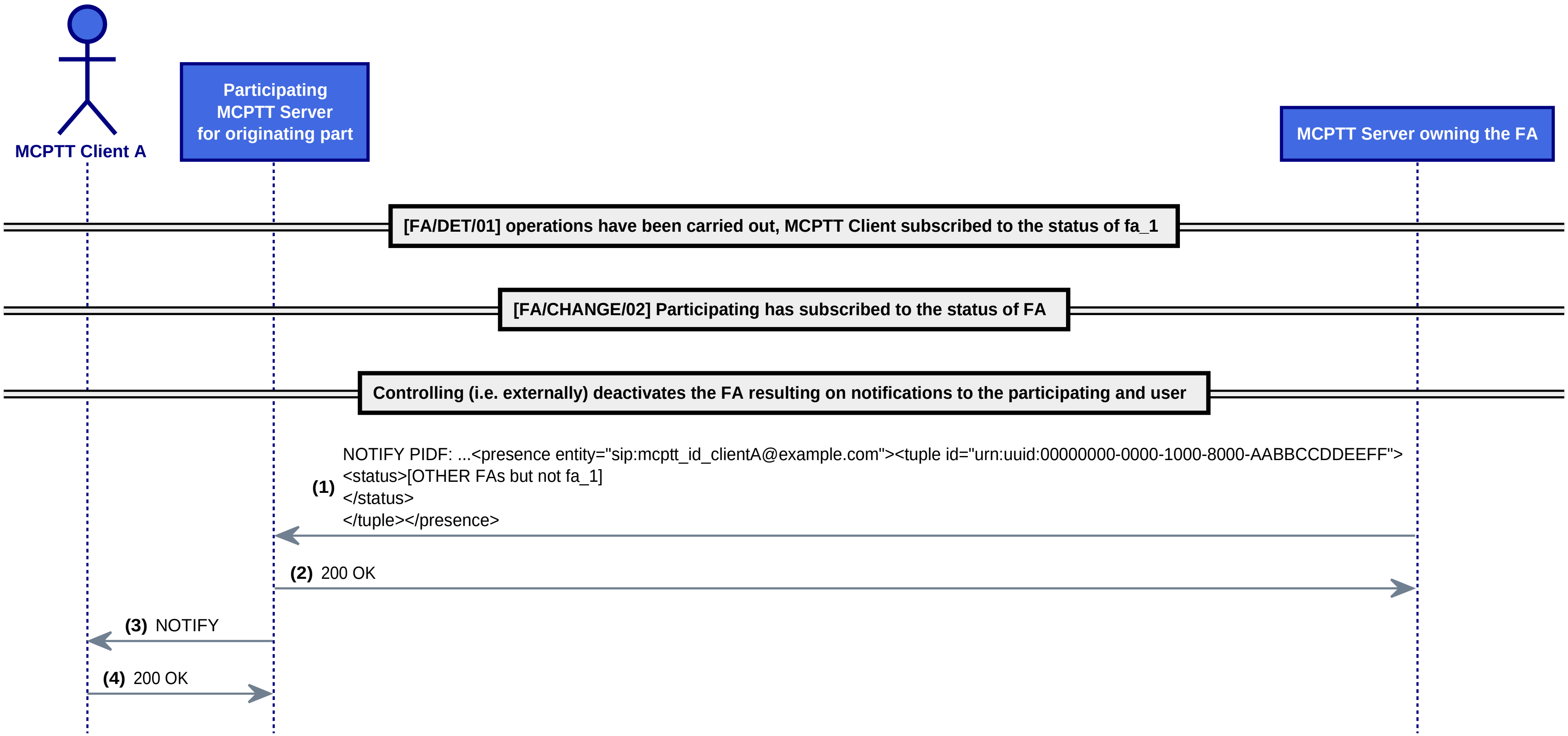

Figure 122fb: FA/CHANGE/05 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 130fb: FA/CHANGE/05 ITD

Interoperability Test Description			
Identifier	FA/CHANGE/05		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, notification of Controlling triggered deactivation of functional alias		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers • Server is aware of the controlling owning a specific functional alias		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	Controlling server deactivates a functional alias (i.e. due to expiration or administrative operations)
	2	check	SIP NOTIFY sent to the participating
	3	check	Server owning the FA sends NOTIFY to the participating serving the mcptt_id subscribed to the status of the functional alias
	4	verify	The Client is properly notified

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

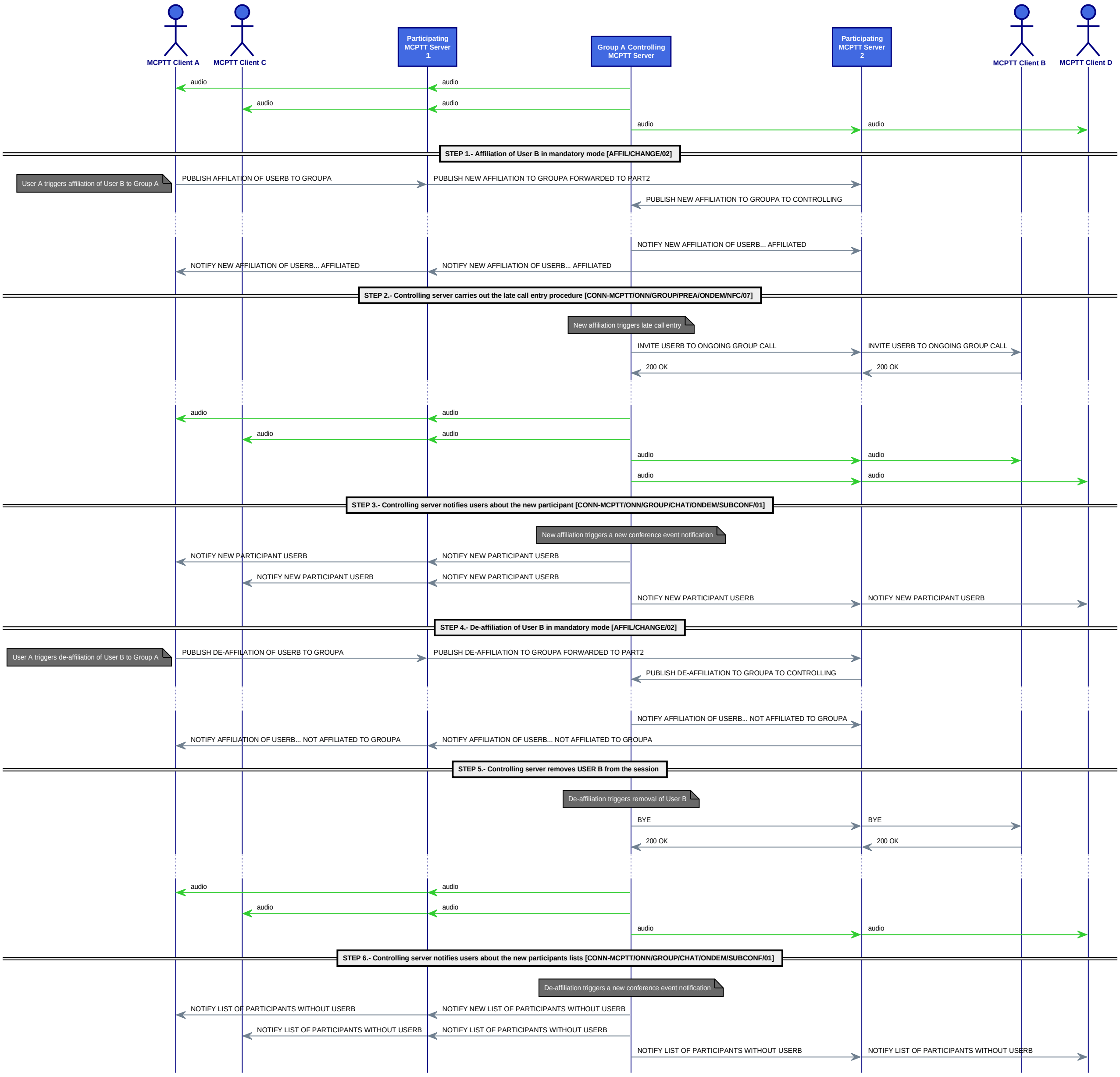

Figure 122g: IOP/01 Message Sequence

7.14.2 GEOFENCING [IOP/02]

Similar to [IOP/01] but it is 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

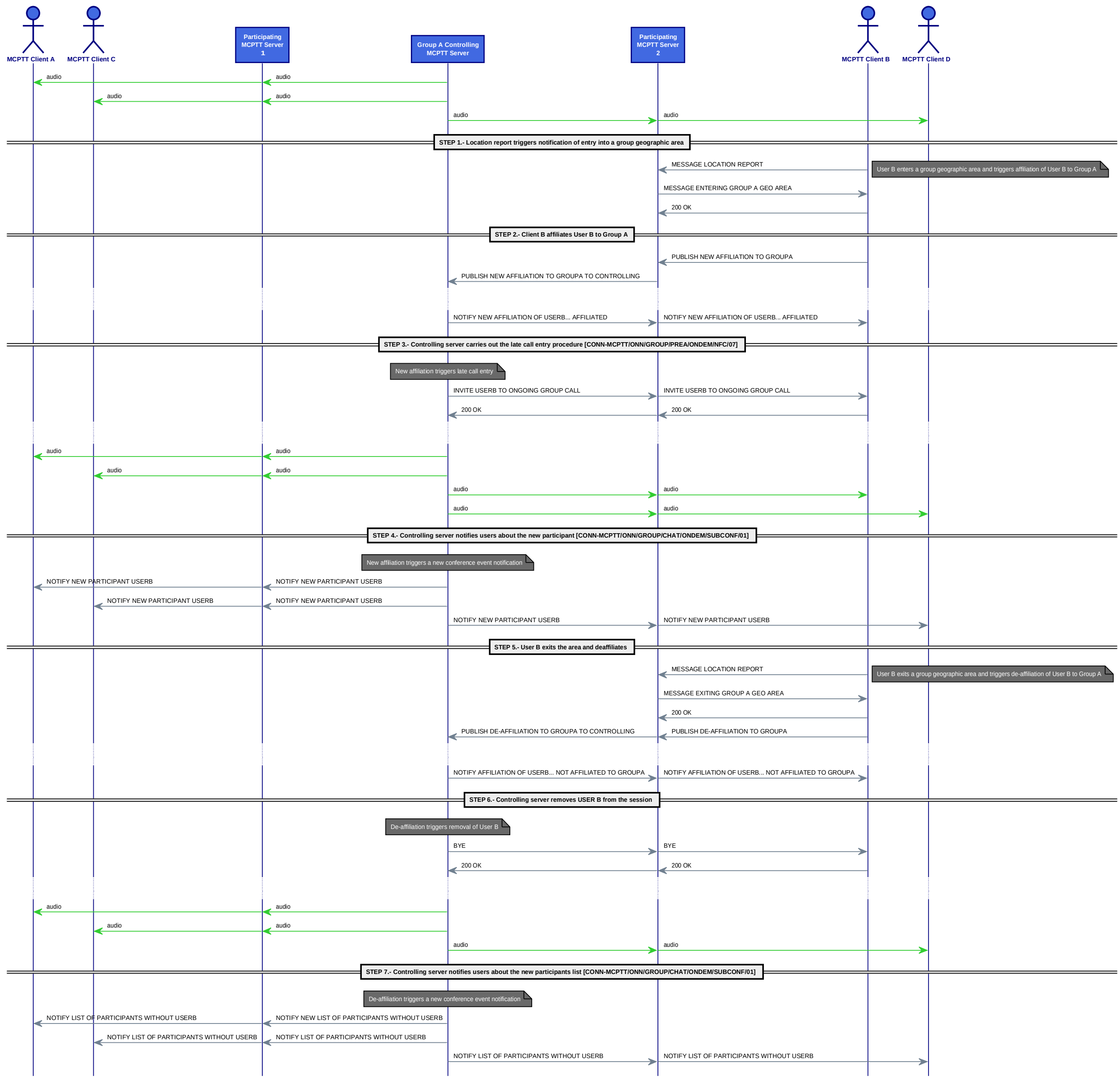

Figure 122h: IOP/02 Message Sequence

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 2nd 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

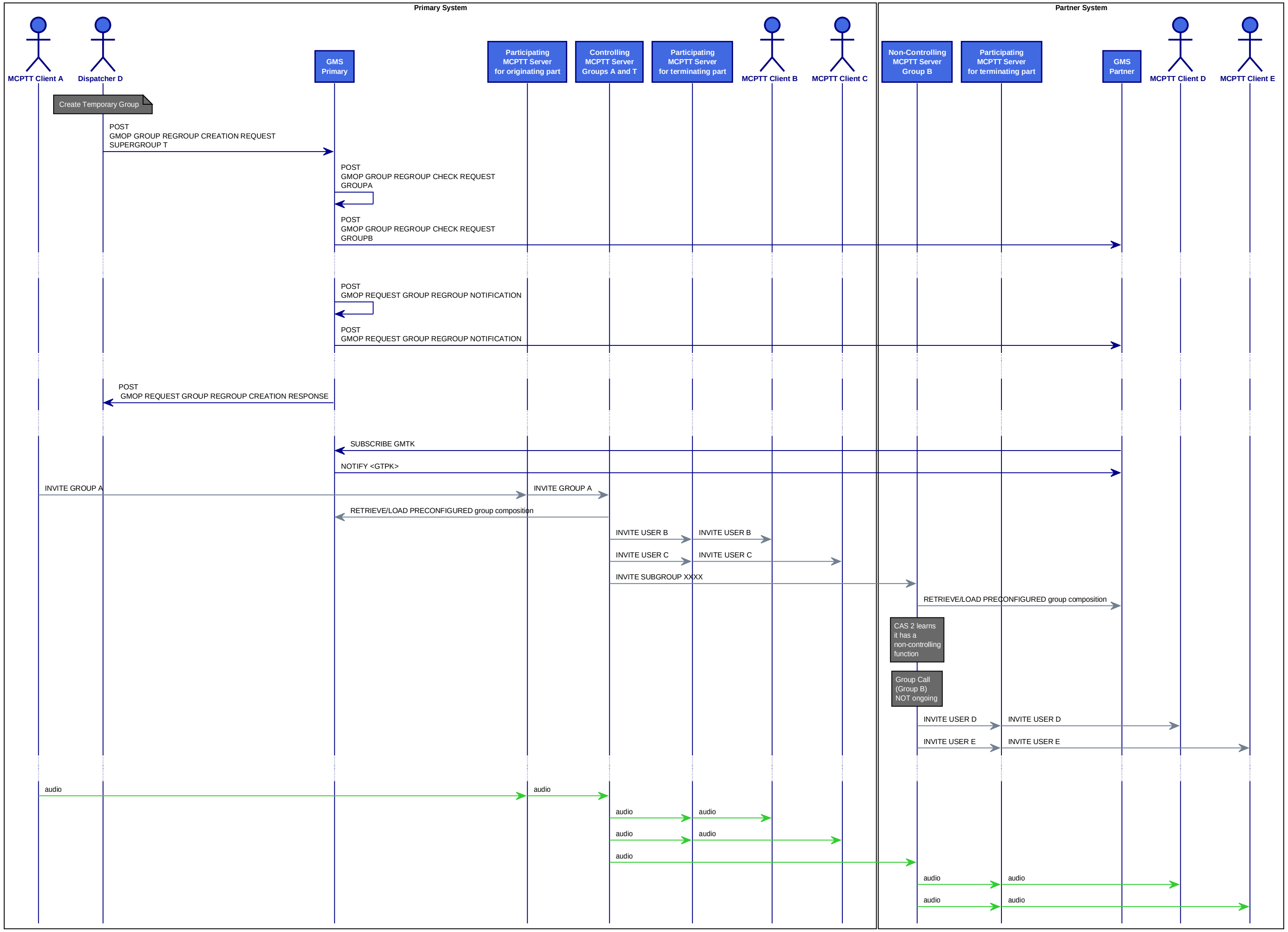

Figure 122i: IOP/03 Message Sequence

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

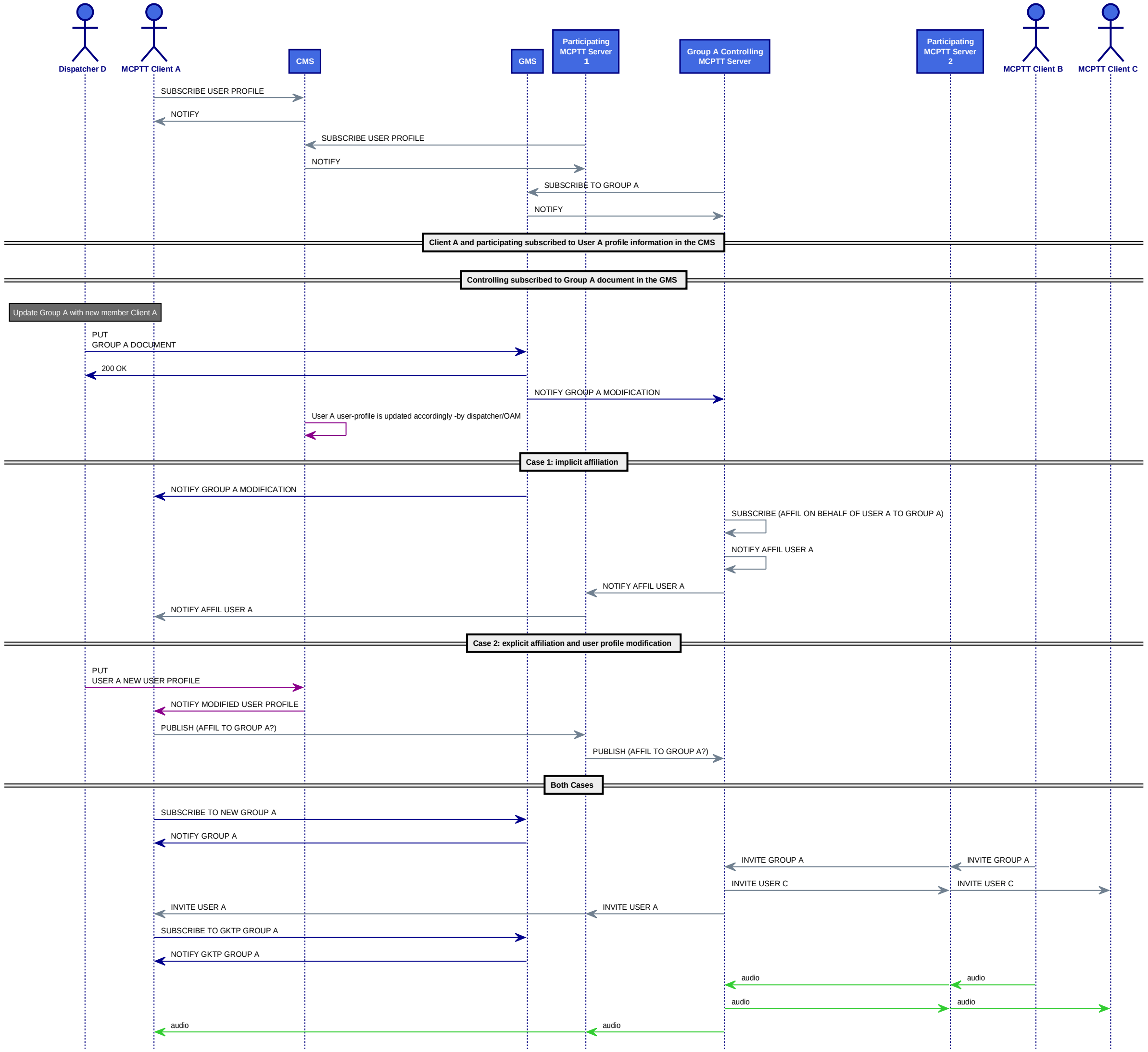

Figure 122j: IOP/04 Message Sequence

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

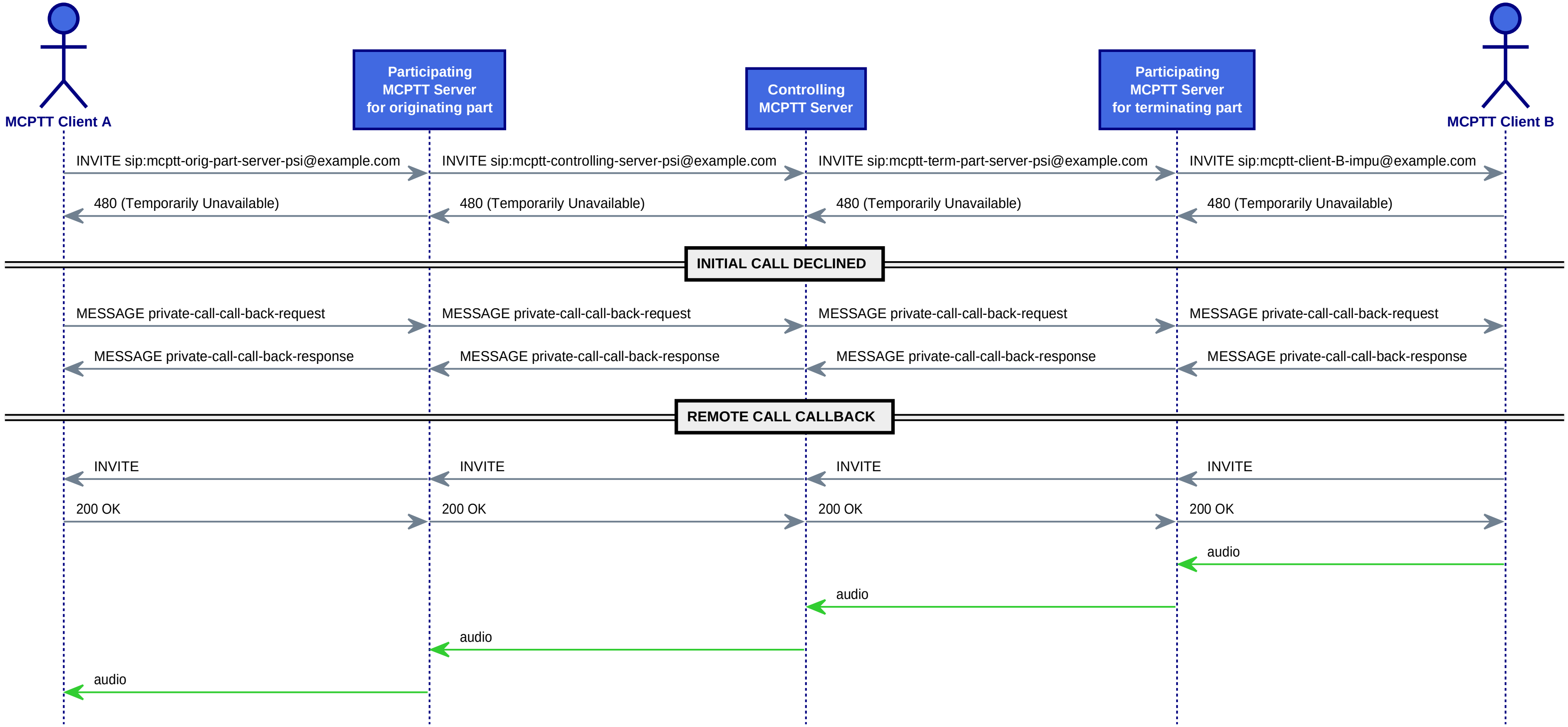

Figure 122k: IOP/05 Message Sequence

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

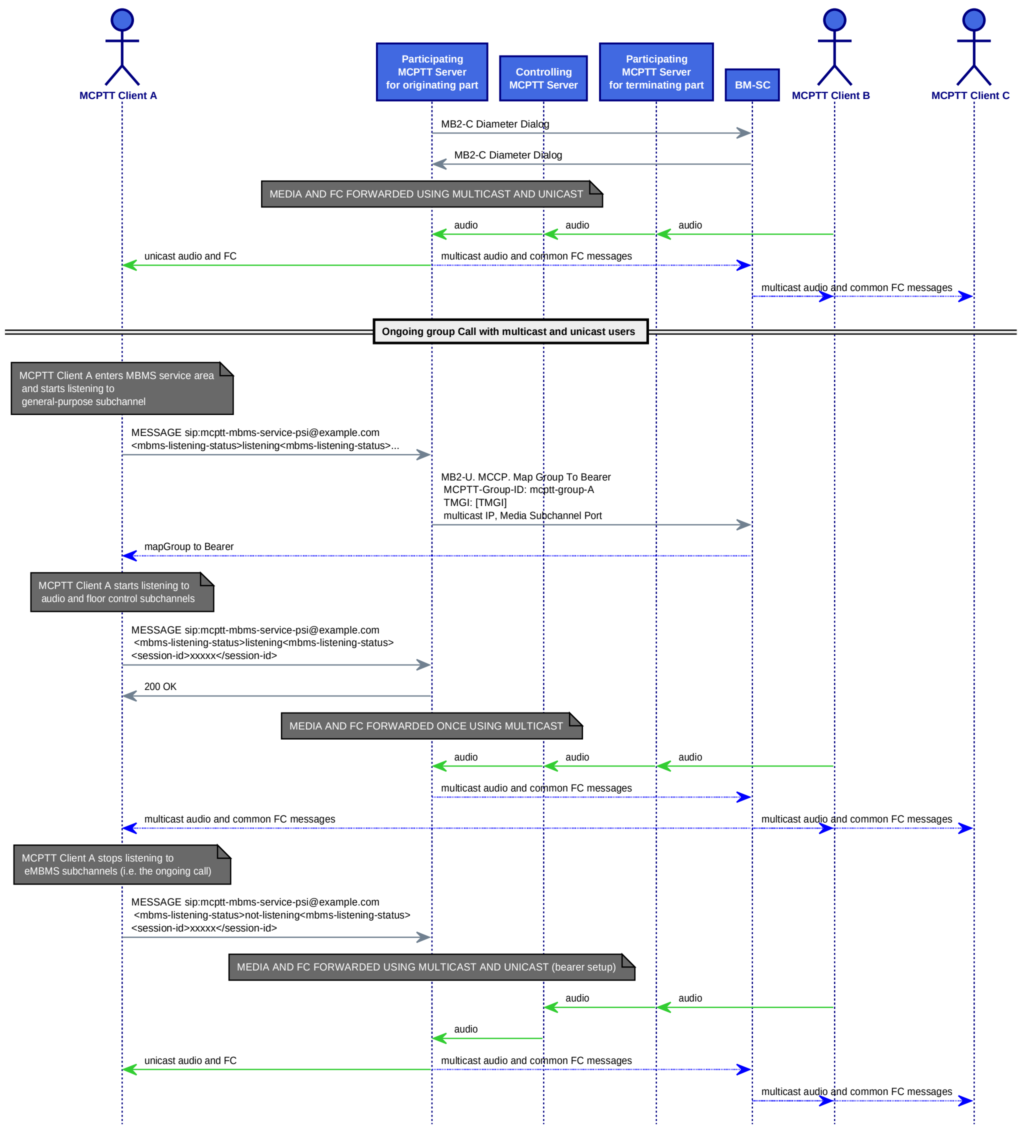

Figure 122l: IOP/06 Message Sequence

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 ETSI TS 124 281 [7]. 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

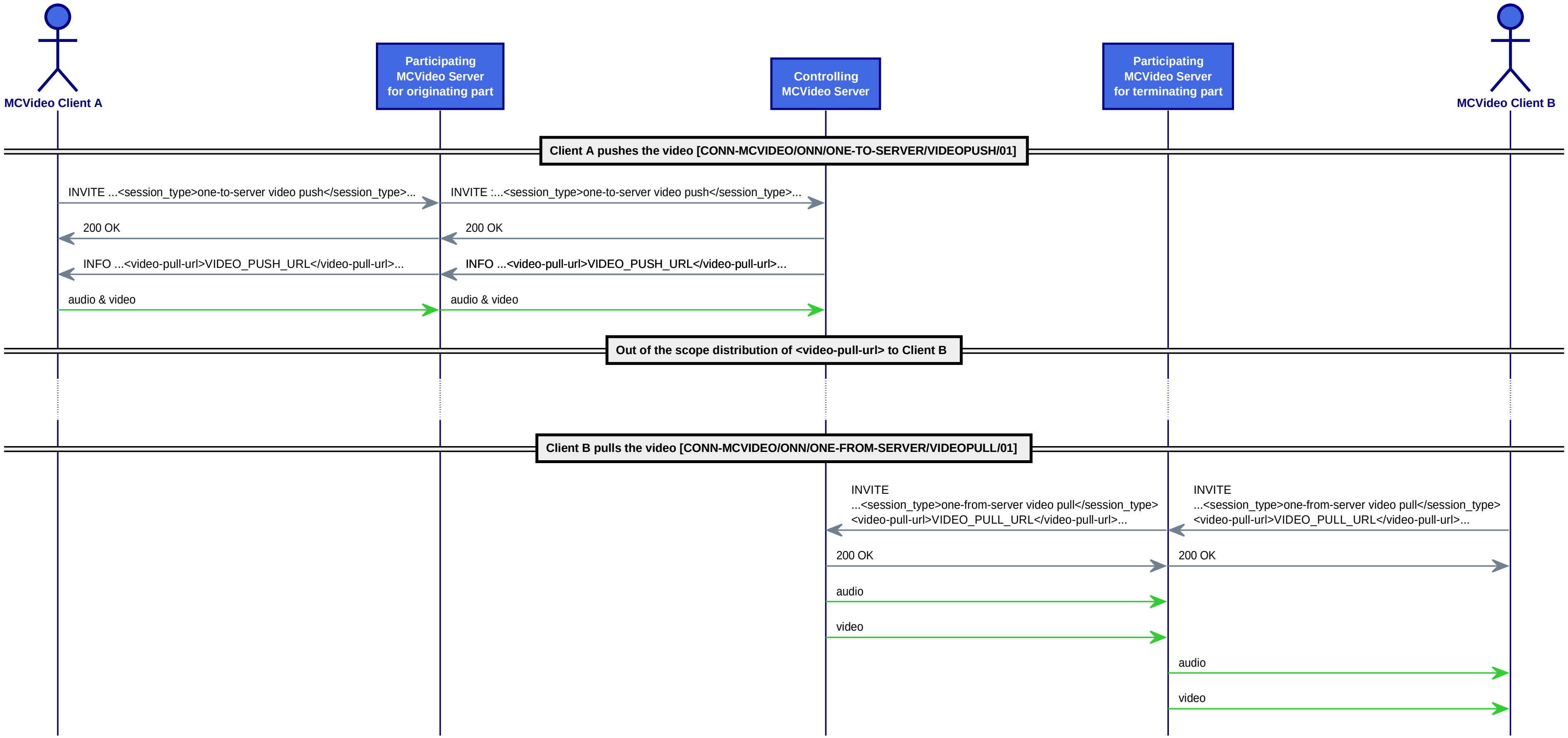

Figure 122m: IOP/07 Message Sequence

7.15 Regroup using a preconfigured group (RegrPrec)

7.15.1 MCPTT user requests a users regroup using a preconfigured group [REGRPREC/USERREG/01]

As defined in clause 16.3.1.1 in ETSI TS 124 379 [9] "upon receiving a request from an MCPTT user to establish an MCPTT group regroup using a preconfigured group", the MCPTT client shall generate a SIP MESSAGE with an application/vnd.3gpp.mcptt-regroup+xml MIME body with <mcptt-regroup-uri> element set to a unique temporary group identity URI, the <preconfigured-group> element set to the group identity of the preconfigured group (template with pre-allocated keys and configuration parameters), the <regroup-action> element set to "create" and the <users-for-regroup> element set to the list of MCPTT IDs of users that are to be included in the regroup. A typical mcptt-info body shall be included too with the <mcptt-client-id> and any active functional alias.

The originating participating shall determine the MCPTT-ID from the public user identity, authorized the user by checking the <allow-regroup> element in the user profile and generate an outgoing SIP MESSAGE with the Request-URI that of the selected controlling function.

The controlling MCPTT function, when receiving a "SIP MESSAGE request to the controlling MCPTT function to request creation of a user regroup using preconfigured group" shall create separated lists of MCPTT IDs containing those users identified in the <users-for-regroup> element in the application/vnd.3gpp.mcptt-regroup+xml MIME body who are served by the same terminating participating MCPTT function and, for each terminating participating MCPTT function identified, shall generate an outgoing SIP MESSAGE.

In every outgoing SIP MESSAGE per terminating participating function the controlling shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the terminating participating MCPTT function, copy the contents of the application/vnd.3gpp.mcptt-info+xml MIME body received in the incoming SIP MESSAGE. Additionally the controlling shall copy the contents of the application/vnd.3gpp.mcptt-regroup+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcptt-regroup+xml MIME body in the outgoing SIP MESSAGE request but only including those <users-for-regroup> elements related to that participating (as compiled in the separated lists).

As defined in clause 16.3.2.4 in ETSI TS 124 379 [9] every terminating participating receiving those "SIP MESSAGE request to the terminating participating MCPTT function to create a user regroup using preconfigured group" shall send a 200 OK and, for each of the MCPTT ID contained in the <users-for-regroup> element of the application/vnd.3gpp.mcptt-regroup+xml MIME body shall generate a SIP MESSAGE request to to the public service identity associated with the MCPTT ID and same mcptt-info and mcptt-regroup with the exceptions that any <users-for-regroup> elements shall not be copied and consider those as affiliated.

Receiving clients will follow the procedure in clause 16.2.1.3 of ETSI TS 124 379 [9].

Finally, when the controlling MCPTT function receives a SIP 200 (OK) response from any of the terminating participating MCPTT functions above it shall send a SIP 200 (OK) response to the incoming SIP MESSAGE, store the value of the <mcptt-regroup-uri> element as the identity of the user regroup based on a preconfigured group, the value of the <preconfigured-group> element of the application/vnd.3gpp.mcptt-regroup+xml MIME body as the identity of the preconfigured group and store the set of MCPTT IDs contained in the <users-for-regroup> element of the application/vnd.3gpp.mcptt-regroup+xml MIME body as the list of the users that are members of the user regroup.

Message Sequence Diagram

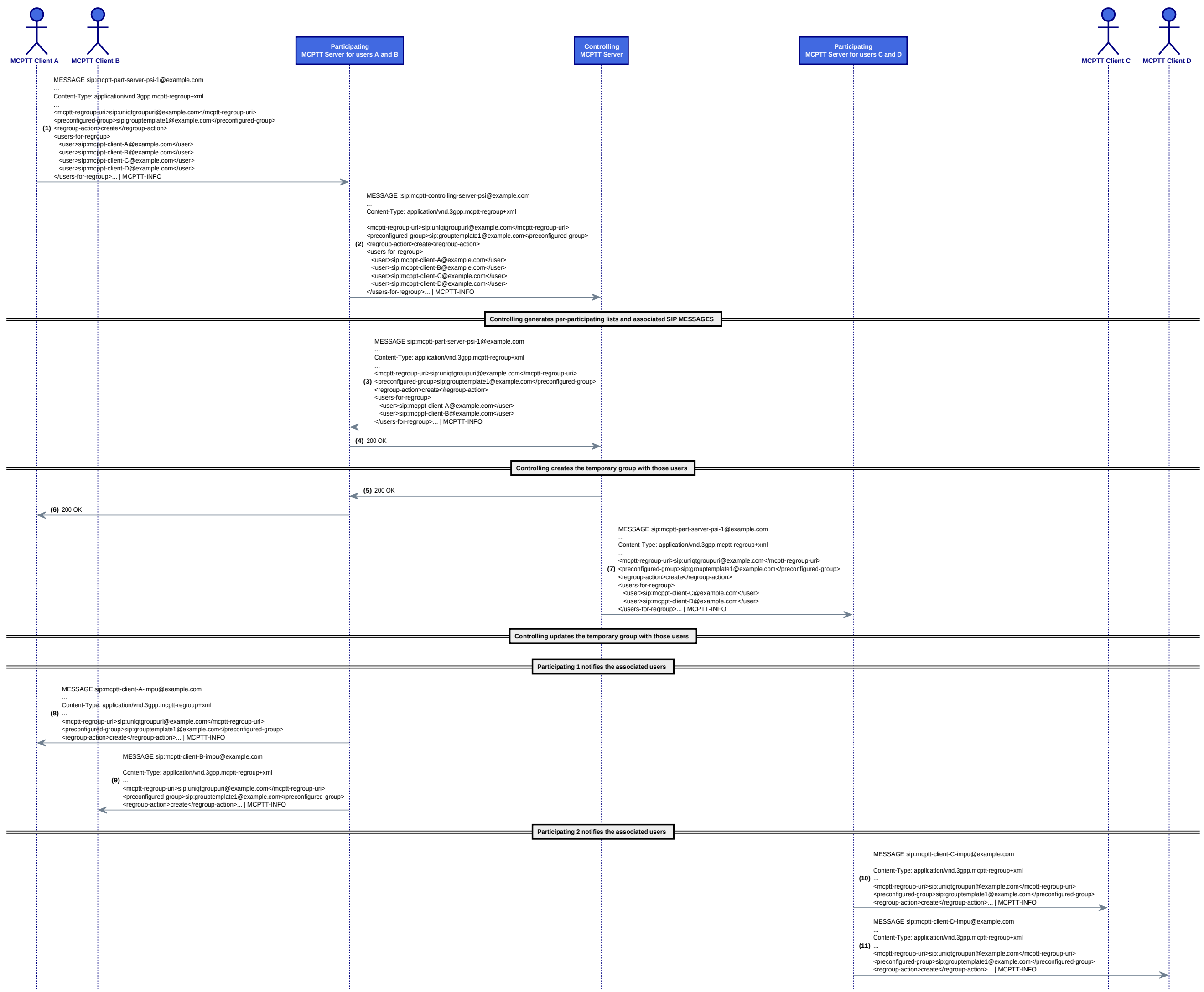

Figure 122ma: REGRPREC/USERREG/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 131: REGRPREC/USERREG/01 ITD

Interoperability Test Description			
Identifier	REGRPREC/USERREG/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the user regroup request operation		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) request the creation of a temporary group using the user regrouping with preconfigure group mechanism (4 users: A, B, C, D)
	2	check	SIP MESSAGE received at the MCPTT participating server of mcptt_id_clientA@example.com
	3	check	SIP MESSAGE received at the MCPTT controlling server
	4	check	The MCPTT controlling server creates separate lists grouped per terminating participating server and generates outgoing SIP MESSAGES to every participating
	5	check	Upon receiving the SIP MESSAGE very participating sends a SIP MESSAGE to the public identity of each of the users he is responsible for with no elements in the <users-for-regroup>
	6	check	Upon 200 OK the participatings the controlling considers the group is created with those users considered as affiliated
	7	verify	Temporary group built with user regrouping using a preconfigured group active

7.15.2 MCPTT user removes a users regroup using a preconfigured group [REGRPREC/USERREG/02]

As defined in clause 16.3.1.2 in ETSI TS 124 379 [9] when the user requests the MCPTT client to remove a user regroup, the MCPTT client uses the procedure in clause 16.2.1.2. Therefore, "upon receiving a request from an MCPTT user to remove a user or group regroup using a preconfigured group, the MCPTT client shall generate a SIP MESSAGE request similarly as in [REGRPREC/USERREG/01] but the <mcptt-regroup-uri> element set to the unique temporary group identity URI representing the regroup to be removed and and the <regroup-action> element set to "remove".

The participating, as defined in clause 16.3.2.3 (and therefore clause 16.2.2.3) will generate a SIP MESSAGE to the controlling copying the contents of the application/vnd.3gpp.mcptt-info+xml MIME body received in the incoming SIP MESSAGE and application/vnd.3gpp.mcptt-regroup+xml.

The controlling (as in clause 16.3.3.2 pointing to clause 16.2.3.2 -step 5-) for each terminating participating MCPTT function shall generate an outgoing SIP MESSAGE, copy the contents of the application/vnd.3gpp.mcptt-info+xml and application/vnd.3gpp.mcptt-regroup+xml MIME bodies and use the list of affiliated MCPTT IDs for this terminating participating MCPTT function to create and include a <users-for-regroup> element contained in the application/vnd.3gpp.mcptt-regroup+xml MIME body.

The participating will create a SIP MESSAGE to the public identities associated to each of the MCPTT IDs served.

Message Sequence Diagram

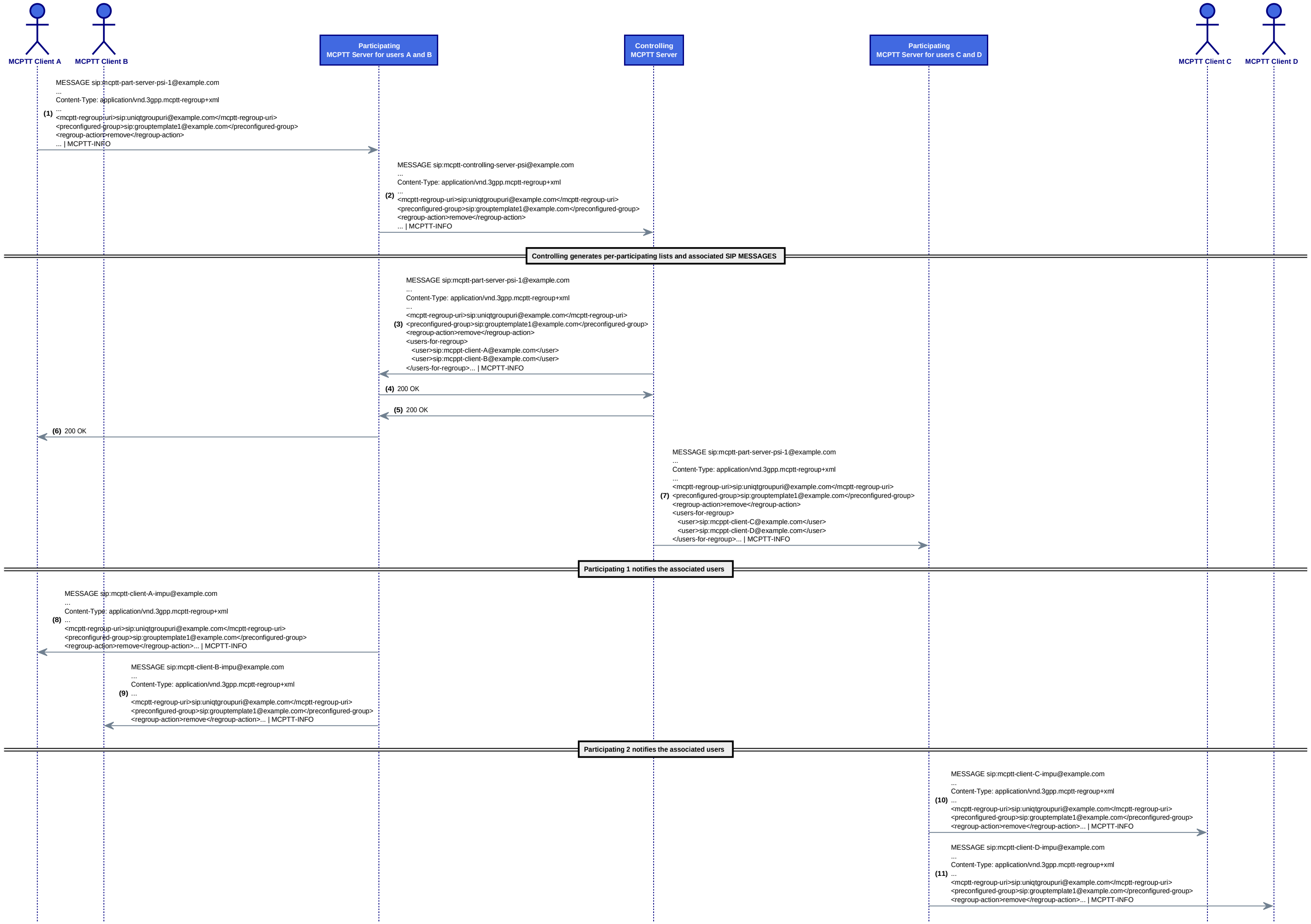

Figure 122mb: REGRPREC/USERREG/02 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 132: REGRPREC/USERREG/02 ITD

Interoperability Test Description			
Identifier	REGRPREC/USERREG/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the user regroup remove operation		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Temporary group using user regrouping already creqted		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) requests the removal of a temporary group using the user regrouping with preconfigure group mechanism
	2	check	SIP MESSAGE received at the MCPTT participating server of mcptt_id_clientA@example.com
	3	check	SIP MESSAGE received at the MCPTT controlling server
	4	check	The MCPTT controlling server creates separate lists grouped per terminating participating server and generates outgoing SIP MESSAGES to every participating
	5	check	Upon receiving the SIP MESSAGE very participating sends a SIP MESSAGE to the public identity of each of the users he is responsible for with no elements in the <users-for-regroup>
	6	check	Upon 200 OK the participatings the controlling considers the group is removed
	7	verify	Temporary group built with user regrouping using a preconfigured group no longer active.

7.15.3 MCPTT user requests a group regroup using a preconfigured group [REGRPREC/GROUPREG/01]

As defined in clause 16.2.1.1 in ETSI TS 124 379 [9] and similarly to [REGRPREC/USERREG/01] "upon receiving a request from an MCPTT user to establish an MCPTT group regroup using a preconfigured group", the MCPTT client shall generate a SIP MESSAGE with an application/vnd.3gpp.mcptt-regroup+xml MIME body with <mcptt-regroup-uri> element set to a unique temporary group identity URI, the <preconfigured-group> element set to the group identity of the preconfigured group (template with pre-allocated keys and configuration parameters), the <regroup-action> element set to "create" and the <groups-for-regroup> element set to the list of MCPTT group identities of groups that are to be included in the regroup.

The originating participating, as defined in clause 16.2.2.2 of ETSI TS 124 379 [9], shall determine the MCPTT ID from the public user identity, authorize the user by checking the <allow-regroup> element in the user profile and generate an outgoing SIP MESSAGE with the Request-URI that of the selected controlling function to manage the regroup.

The controlling MCPTT function, when receiving a "SIP MESSAGE request to the controlling MCPTT function to request creation of a group regroup using preconfigured group" shall for each group identified in the <groups-for-regroup> element shall determine the controlling MCPTT function serving that specific group and later generate an outgoing SIP MESSAGE request copying the mcptt-info and mcptt-regroup MIME bodies. Note that the controlling MCPTT function serving each of these consitituent groups will assume the role of a non-controlling MCPTT function for the regroup.

Finally, the non-controlling MCPTT functions, as defined in clause 16.2.4.1 of ETSI TS 124 379 [9], when receiving the above mentioned "SIP MESSAGE request to a non-controlling MCPTT function to request creation of a group regroup using preconfigured group", for each one of the groups identified in the <groups-for-regroup> element of the mcptt-regroup MIME body in the incoming SIP MESSAGE request for which the MCPTT function is the non-controlling function will check whether the group is already regrouped. Otherwise, they shall store the information in the request (<groups-for-regroup>, <mcptt-regroup-uri>, <preconfigured-group> and <groups-for-regroup>), send back a SIP 200 OK, merge the lists of MCPTT IDs that belong to and are affiliated with any of the groups identified in the <groups-for-regroup> element per every terminating participating MCPTT function and, for each terminating participating MCPTT function identified, shall generate an outgoing SIP MESSAGE with a copy of the received the mcptt-info and mcptt-regroup MIME bodies and use the merged lists to populate the <users-for-regroup> element in the latter.

Finally, in the terminating participating side as defined in clause 16.2.2.4 of ETSI TS 124 379 [9], when receiving a "SIP MESSAGE request to the terminating participating MCPTT function to create a group regroup using preconfigured group", it shall send a SIP 200 (OK) response back and for each MCPTT ID contained in the <users-for-regroup> element of the mcptt-regroup shall generate a SIP MESSAGE request. The terminating participating function shall store the <mcptt-regroup-uri> element as the identity of the regroup based on a preconfigured group, <preconfigured-group> element of the mcptt-regroup as the identity of the preconfigured group and the set of MCPTT IDs contained in the <users-for-regroup> as the list of the users that are members of the group regroup.

The targeted clients in users-for-regroup when "receiving a notification of creation of a regroup using preconfigured group" should notify the MCPTT user of the creation of the regroup using preconfigured group, send a 200 (OK) response, store the value of the <mcptt-regroup-uri> element as the temporary group identity and associate that with the group identity received in the <mcptt-regroup-uri> element, along with the information that the created regroup is a user regroup, should store the contents of the <users-for-regroup> element as the list of users that are part of that user regroup and the contents of the <groups-for-regroup> element as the list of groups that are part of that group regroup.

Message Sequence Diagram

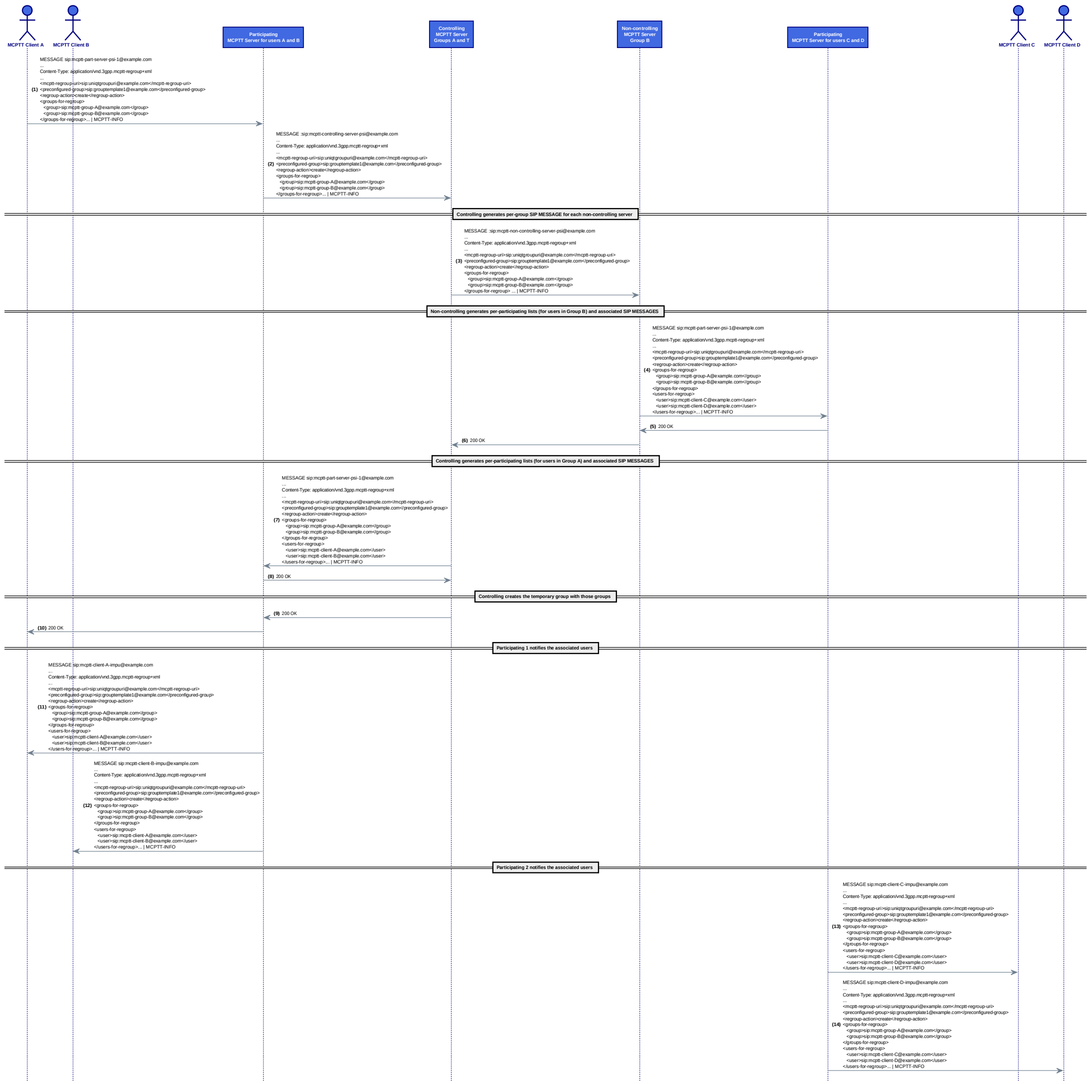

Figure 122mc: REGRPREC/GROUPREG/01 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 133: REGRPREC/GROUPREG/01 ITD

Interoperability Test Description			
Identifier	REGRPREC/GROUPREG/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the group regroup request operation		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling, non controlling and participating servers • UEs properly registered to the SIP core/IMS and MCPTT system		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) request the creation of a temporary group using the group regrouping with preconfigured group mechanism (2 groups: A and B)
	2	check	SIP MESSAGE received at the MCPTT participating server of mcptt_id_clientA@example.com
	3	check	SIP MESSAGE received at the MCPTT controlling server
	4	check	The MCPTT controlling server sends message to the two non-controlling servers associated to the constituent groups
	5	check	The non-controlling servers create separate lists grouped per terminating participating server and genera outgoing SIP MESSAGES to every participating per each group
	6	check	Upon receiving the SIP MESSAGE every participating sends a SIP MESSAGE to the public identity of each of the users he is responsible for
	7	verify	Temporary group built with group regrouping using a preconfigured group active

7.15.4 MCPTT user removes a group regroup using a preconfigured group [REGRPREC/GROUPREG/02]

As defined in clause 16.2.1.2 in ETSI TS 124 379 [9] and similarly to [REGRPREC/USERREG/02] "upon receiving a request from an MCPTT user to remove a user or group regroup using a preconfigured group", the MCPTT client shall generate a SIP MESSAGE with an application/vnd.3gpp.mcptt-regroup+xml MIME body with <mcptt-regroup-uri> element set to the unique temporary group identity URI of the group to be removed and the <regroup-action> element set to "remove".

The originating participating, as defined in clause 16.2.2.3 of ETSI TS 124 379 [9], shall determine the MCPTT ID from the public user identity, authorize the user by checking the <allow-regroup> element in the user profile and generate an outgoing SIP MESSAGE with the Request-URI that of the selected controlling function associated with the regroup identity and copy the content of mcptt-info and mcptt-regroup bodies of the incoming message.

Later, according to clause 16.2.3.2 of ETSI TS 124 379 [9] the controlling MCPTT function, when receiving a "SIP MESSAGE request to the controlling MCPTT function to remove a regroup using preconfigured group" shall send a 200 OK and, if the regroup is a group regroup based on preconfigured group will then, for each of the constituent groups: determine the non-controlling MCPTT function serving that specific group and later generate an outgoing SIP MESSAGE request copying again the mcptt-info and mcptt-regroup MIME bodies.

The non-controlling MCPTT functions, as defined in clause 16.2.4.2 of ETSI TS 124 379 [9], when receiving the above mentioned "SIP MESSAGE request to a non-controlling MCPTT function to remove a group regroup using preconfigured group" will send back a 200 OK. Then. for each one of the constituent groups belonging to the regroup identified in the <mcptt-regroup-uri> in mcptt-regroup MIME body for which this MCPTT function is the non-controlling MCPTT function. It shall create a list of terminating participating MCPTT functions serving MCPTT IDs belonging to the identified constituent groups and for each member of that group list it shall create a list of MCPTT IDs affiliated to the regroup and served by that terminating participating MCPTT function. For each of the resulting participating MCPTT function listed above it shall generate an outgoing SIP MESSAGE with the mcptt-info and mcptt-regroup MIME bodies and add a <users-for-regroup> element containing the list of MCPTT IDs affiliated to the regroup that are served by this terminating participating MCPTT function.

Finally, in the terminating participating side as defined in clause 16.2.2.5 of ETSI TS 124 379 [9], when receiving a "SIP MESSAGE request to the terminating participating MCPTT function to remove a regroup using preconfigured group", it shall send a SIP 200 (OK) response back and, for each served MCPTT ID affiliated with the temporary group identity in the incoming SIP MESSAGE, shall generate and send a SIP MESSAGE request. It shall copy the mcptt-info and mpctt-regroup MIME bodies with the exception in the latter that any <users-for-regroup> or <groups-for-regroup> elements shall not be copied. After sending the SIP MESSAGE it should further consider the associated MCPTT IDs as deaffiliated from the regroup.

The targeted clients, following clause 16.2.1.4 of ETSI TS 124 379 [9], when receiving the SIP MESSAGE with the request of the removal of a regroup using preconfigured group should notify the MCPTT user of the removal of the regroup using preconfigured group, send a 200 (OK) response, and shall consider the MCPTT client is de-affiliated from the regroup.

Message Sequence Diagram

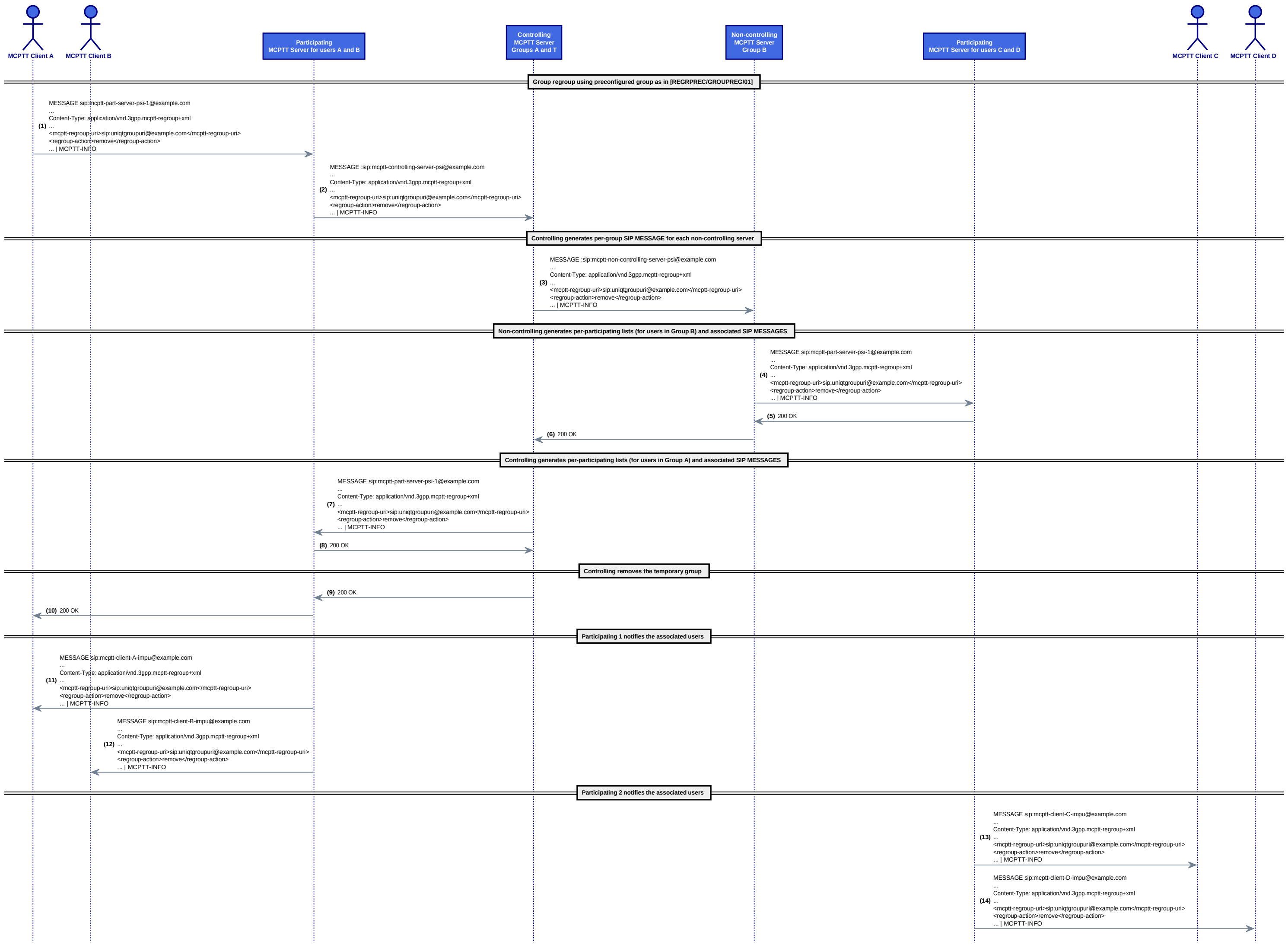

Figure 122md: REGRPREC/GROUPREG/02 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 134: REGRPREC/GROUPREG/02 ITD

Interoperability Test Description			
Identifier	REGRPREC/GROUPREG/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the group regroup removal operation		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling, non controlling and participating servers • UEs properly registered to the SIP core/IMS and MCPTT system • Group regroup using a preconfigured group previously created		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example.com) request the removal of a temporary group
	2	check	SIP MESSAGE received at the MCPTT participating server of mcptt_id_clientA@example.com
	3	check	SIP MESSAGE received at the MCPTT controlling server
	4	check	The MCPTT controlling server sends message to the two non-controlling servers associated to the constituent groups
	5	check	The non-controlling servers create separate lists grouped per terminating participating server and generate outgoing SIP MESSAGES to every participating per each group to be removed from the regroup
	6	check	Upon receiving the SIP MESSAGE every participating sends a SIP MESSAGE to the public identity of each of the users he is responsible for.
	7	verify	Temporary group removed (users deaffiliated)

7.16 MCData Message Store (MCDATAMS)

7.16.1 MCData message store client retrieves an object [MCDATAMS/RETR/01]

As defined in clause 21.2.1.1 in ETSI TS 124 282 [8] in order to retrieve the object from message store function, the message store client, acting as an HTTP client shall follow the procedure described in clause 6.2 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44] by generating an HTTP GET request as specified in clause 6.2.3 towards the MCData store function with the Host header field set to a hostname identifying the message store function. The request shall include a valid MCData access token in the HTTP Authorization header.

Message Sequence Diagram

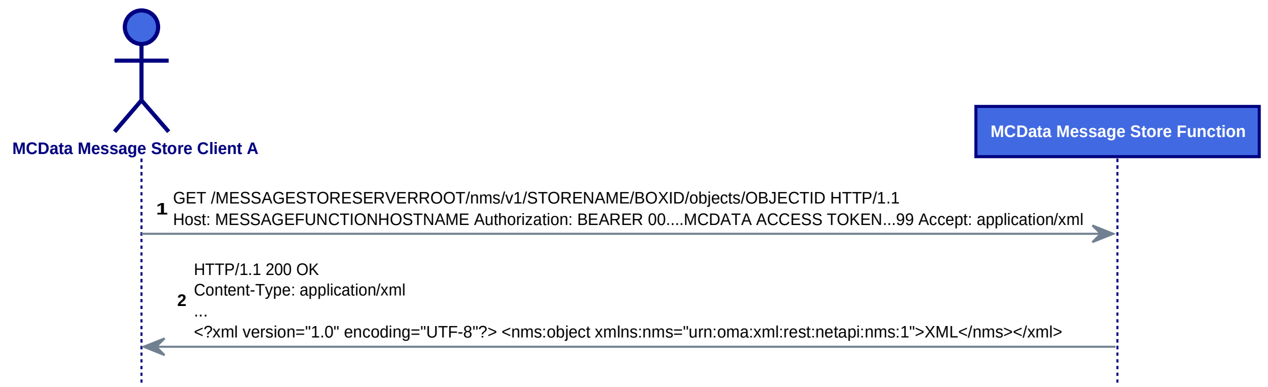

Figure 122me: MCDATAMS/RETR/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 135: MCDATAMS/RETR/01 ITD

Interoperability Test Description			
Identifier	MCDATAMS/RETR/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client to retrieve an object		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store client in the MCData client sent the request to retrieve a specific object id using GET
	2	check	200 OK response
	3	verify	Object retrieved in the message store client

7.16.2 MCData message store client searches for information about a selected set of objects [MCDATAMS/SEARCH/01]

As defined in clause 21.2.2.1 in ETSI TS 124 282 [8] in order to search for information about a selected set of objects in the message store, the message store client, acting as an HTTP client shall follow the procedure described in clause 6.8 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44] by generating an HTTP POST request as specified in clause 6.8.5 towards the MCData store function with the Host header field set to a hostname identifying the message store function. The request shall include a valid MCData access token in the HTTP Authorization header and may include a SelectionCriteria.

Message Sequence Diagram

Figure 122mf: MCDATAMS/SEARCH/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 136: MCDATAMS/SEARCH/01 ITD

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">MCDATAMS/SEARCH/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client to search for information</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCData-Client_ONN-MCData-MS
• MCData-MS Function</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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
• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="4">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>MCData message store client in the MCData client sent the request to search for information about a set of objects using POST and specific search criteria</td></tr>
<tr><td>2</td><td>check</td><td>200 OK response</td></tr>
<tr><td>3</td><td>verify</td><td>JSON encoded search result information retrieved</td></tr>
</table>

7.16.3 MCData message store client updates an existing object [MCDATAMS/UPDATE/01]

As defined in clause 21.2.3.1 in ETSI TS 124 282 [8] in order to update object(s) in the message store, the message store client, acting as an HTTP client, shall either follow the procedure described in clause 6.3 or 6.4, for individual object update, or 6.11 for bulk update of objects of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44]. In this test case updating an individual object only will be considered (bulk update is considered For Further Study).

The MCData store client will generate an HTTP PUT request as specified in clauses 6.3.4 and 6.4.4 towards the MCData store function with the Host header field set to a hostname identifying the message store function. Upon receipt of an HTTP response, the message store client shall follow the procedure described in clauses 6.3.2 and 6.4.2 in OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44].

In figure 122mg an update involving adding the Answered flag will be considered.

Message Sequence Diagram

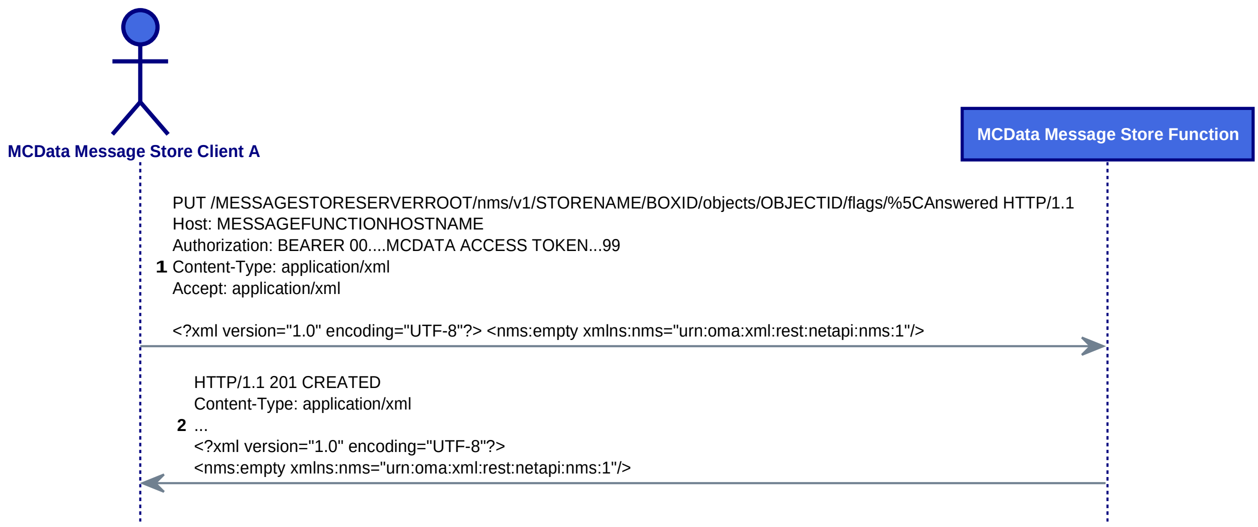

Figure 122mg: MCDATAMS/UPDATE/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 137: MCDATAMS/UPDATE/01 ITD

Interoperability Test Description			
Identifier	MCDATAMS/UPDATE/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client to update an existing object		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store client in the MCData client updates a specific object by using the PUT HTTP method and adding an additional flag
	2	check	201 CREATED response
	3	verify	Object properly updated

7.16.4 MCData message store client deletes an object [MCDATAMS/DEL/01]

As defined in clause 21.2.4.1 in ETSI TS 124 282 [8] in order to delete object(s) in the message store, the message store client shall follow the procedure described in clause 6.2, for individual object delete, or clause 6.12 for bulk delete of objects, both from OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44]. In this test case deleting an individual object only will be considered (bulk deletion is considered For Further Study).

The MCData store client will generate an HTTP DELETE request as specified in clause 6.2.6 towards the MCData store function with the Host header field set to a hostname identifying the message store function. Upon receipt of an HTTP response, the message store client shall follow the procedure described in clause 6.2.2 in [44].

Message Sequence Diagram

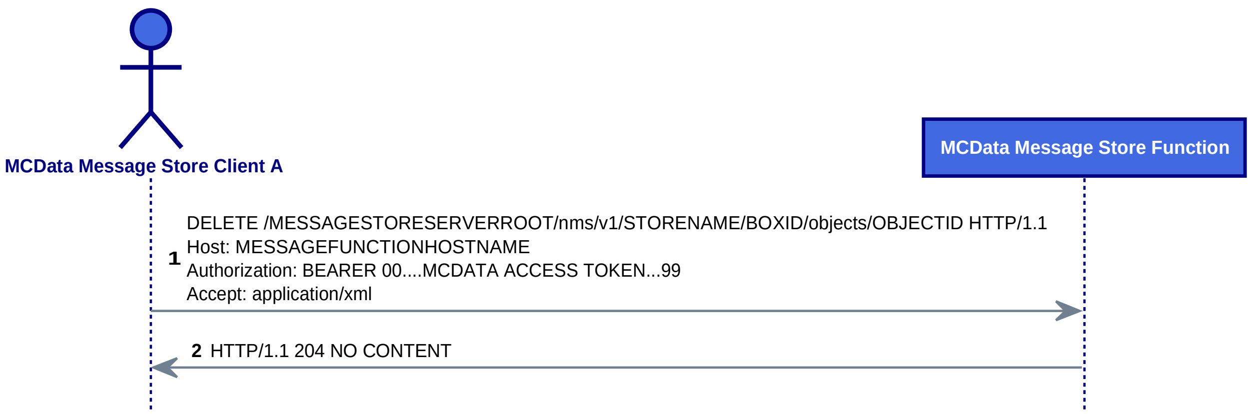

Figure 122mh: MCDATAMS/DEL/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 138: MCDATAMS/DEL/01 ITD

Interoperability Test Description			
Identifier	MCDATAMS/DEL/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client to delete an object		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store client in the MCData client deletes a specific object by using the DELETE HTTP method
	2	check	204 NO CONTENT response
	3	verify	Object properly deleted

7.16.5 MDData server deposits an object of an MCData user [MCDATAMS/DEP/01]

As defined in clause 21.2.5A in ETSI TS 124 282 [8] the MCData server acting as an HTTP client, in order to deposit an object of an MCData user in the message store, shall follow the procedure described in clause 6.1 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44]. It will generate an HTTP POST request as specified in clause 6.1.5 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44] towards the MCData store function with the Host header field set to a hostname identifying the message store function and shall set the boxId of the resource URL to MCData ID which (the identity of the MCData user, sip://mcdata_id_clientA@example.com in this case) as specified in clause 6.1.1 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44].

NOTE: In clause 6.1.5 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44] several examples of the different object creating mechanisms are considered. In figure 122mi the simplest one is considered (see example in clause 6.1.5.1 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44]).

Message Sequence Diagram

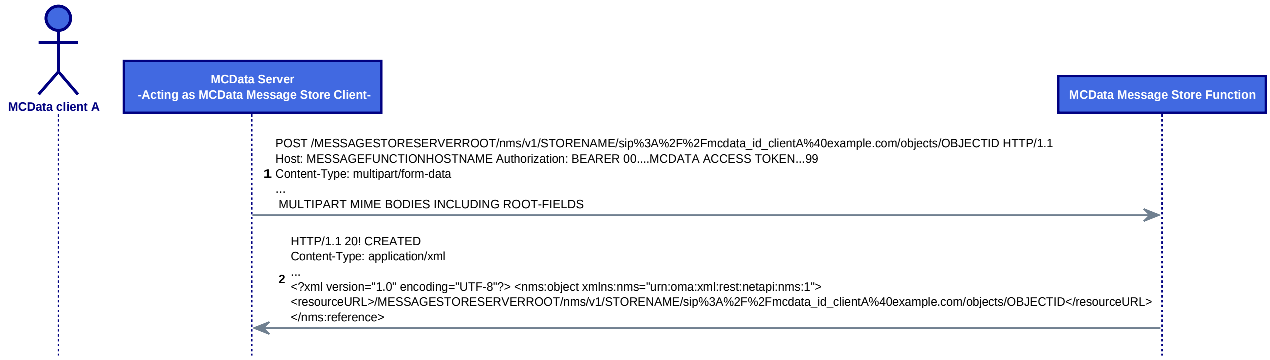

Figure 122mi: MCDATAMS/DEP/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 139: MCDATAMS/DEP/01 ITD

Interoperability Test Description			
Identifier	MCDATAMS/DEP/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData server to deposit an object		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData server acting as MCData message store client deposits an object using the mcdata ID of client A
	2	check	201 CREATED response
	3	verify	Object properly deposited in the boxId of MCData client A

7.16.6 MCData message store client copies object(s) and/or folder(s) to a destination folder [MCDATAMS/COPY/01]

As defined in clause 21.2.6.1 in ETSI TS 124 282 [8], in order to copy object(s) and/or folder(s) to a destination folder in message store, the message store client shall follow the procedure described in clause 6.18 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44].

Considering the basic object copy mechanism, the message store client will generate an HTTP POST request identifying the target folder and the source object towards the message store function, as specified in clause 6.18.5 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44]. The Host header field will be set to a hostname identifying the message store function and will included the proper MCData access token. Upon receipt of the HTTP Response (200 OK), the message store client should follow the procedure as described in clause 6.18.2 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44].

NOTE: In figure 12mj and OMA example the specific matching of the object(s), resourceURL(s) and path(s).

Message Sequence Diagram

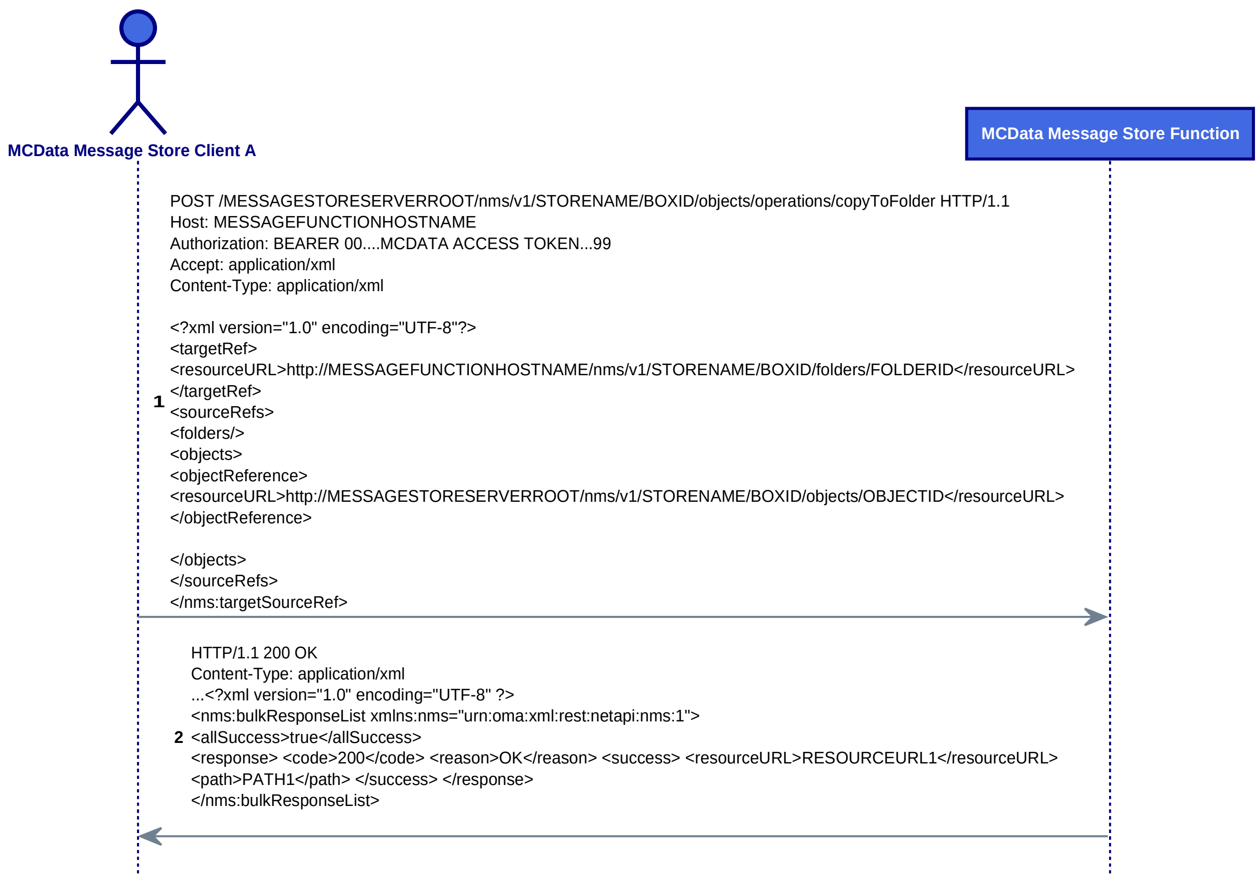

Figure 122mj: MCDATAMS/COPY/01Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 140: MCDATAMS/COPY/01 ITD

Interoperability Test Description			
Identifier	MCDATAMS/COPY/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client to copy object(s) to a folder		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store client copies object associated to OBJECTID to specific folder (FOLDERID) using a POST HTTP method.
	2	check	200 OK response with a XML stating the success of the operation
	3	verify	Object properly copied to the specific folder

7.16.7 MCData message store client deletes a folder [MCDATAMS/DEL/02]

As defined in clause 21.2.7.1 in ETSI TS 124 282 [8] -similarly to [MCDATAMS/DEL/01]- in order to delete a folder in the message store, the message store client shall follow the procedure described in clause 6.14 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44]. The MCData message store client will generate an HTTP DELETE request as specified in clause 6.14.6 of [44] towards the MCData store function with the Host header field set to a hostname identifying the message store function. Upon receipt of an HTTP response, the message store client shall follow the procedure described in clause 6.14.2 in [44].

Message Sequence Diagram

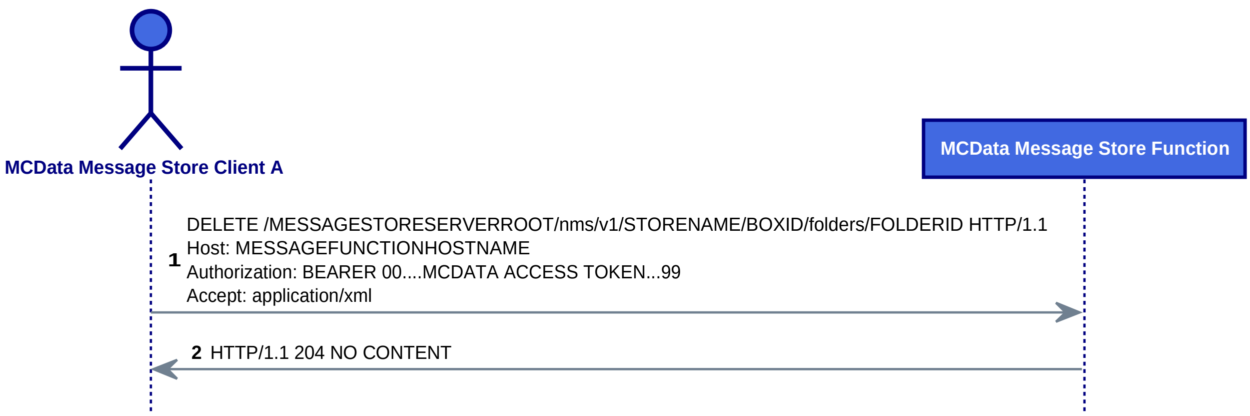

Figure 122mk: MCDATAMS/DEL/02 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 141: MCDATAMS/DEL/02 ITD

Interoperability Test Description			
Identifier	MCDATAMS/DEL/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client to delete a folder		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store client deletes a specific folder by using the DELETE HTTP method
	2	check	204 NO CONTENT response
	3	verify	Object properly deleted

7.16.8 MCData message store client creates a folder [MCDATAMS/CRE/01]

As defined in clause 21.2.8.1 in ETSI TS 124 282 [8] in order to create a folder in the message store, the message store client shall follow the procedure described in clause 6.13 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44]. The MCData message store client will generate an HTTP POST request as specified in clause 6.13.5 of [44] with the Host header field set to a hostname identifying the message store function and the target folder where the new folder is to be created.

Upon receipt of an HTTP response, the message store client shall follow the procedure described in clause 6.13.2 in OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44].

NOTE: In this test case, and associated sequence diagram, the simplest case (folder creation by parentFolder path) is considered.

Message Sequence Diagram

Figure 122ml: MCDATAMS/CRE/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 142: MCDATAMS/CRE/01 ITD

Interoperability Test Description			
Identifier	MCDATAMS/CRE/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client to delete a folder		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store client creates a specific folder by using the POST HTTP method and parent folder path information
	2	check	204 NO CONTENT response with the newly assigned folder id
	3	verify	Object properly deleted

7.16.9 MCData message store client moves an object to a destination folder [MCDATAMS/MOVE/01]

As defined in clause 21.2.10.1 in ETSI TS 124 282 [8] in order to move object(s) and folder(s) to a destination folder in the message store, the message store client shall follow the procedure described in clause 6.19 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44]. The MCData message store client will generate an HTTP POST request as specified in clause 6.19.5 of [44] with the Host header field set to a hostname identifying the message store function, the source objet(s)/folders(s) and the designated destination folder.

Upon receipt of an HTTP response, the message store client shall follow the procedure described in clause 6.19.2 in [44]. Note that in this test case, and associated sequence diagram, the simplest case (moving a single object to the destination folder) is considered.

Message Sequence Diagram

Figure 122mm: MCDATAMS/MOVE/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 143: MCDATAMS/MOVE/01 ITD

Interoperability Test Description			
Identifier	MCDATAMS/MOVE/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client to move an object to a destination folder		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message storec client deletes a specific folder by using the DELETE HTTP method
	2	check	204 NO CONTENT response
	3	verify	Object properly deleted

7.16.10 MCData message store client searches for information about a selected set of folders [MCDATAMS/SEARCH/02]

As defined in clause 21.2.11.1 in ETSI TS 124 282 [8] in order to search for information about a selected set of folder(s) in the message store -similarly to [MCDATAMS/SEARCH/01], the message store client, acting as an HTTP client shall follow the procedure described in clause 6.16 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44]. It will generate an HTTP POST request as specified in clause 6.16.5 of [44] towards the MCData store function with the Host header field set to a hostname identifying the message store function. The request shall include a valid MCData access token in the HTTP Authorization header and may include a SelectionCriteria.

Upon receipt of an HTTP response, the message store client shall follow the procedure described in clause 6.19.2 in [44].

Message Sequence Diagram

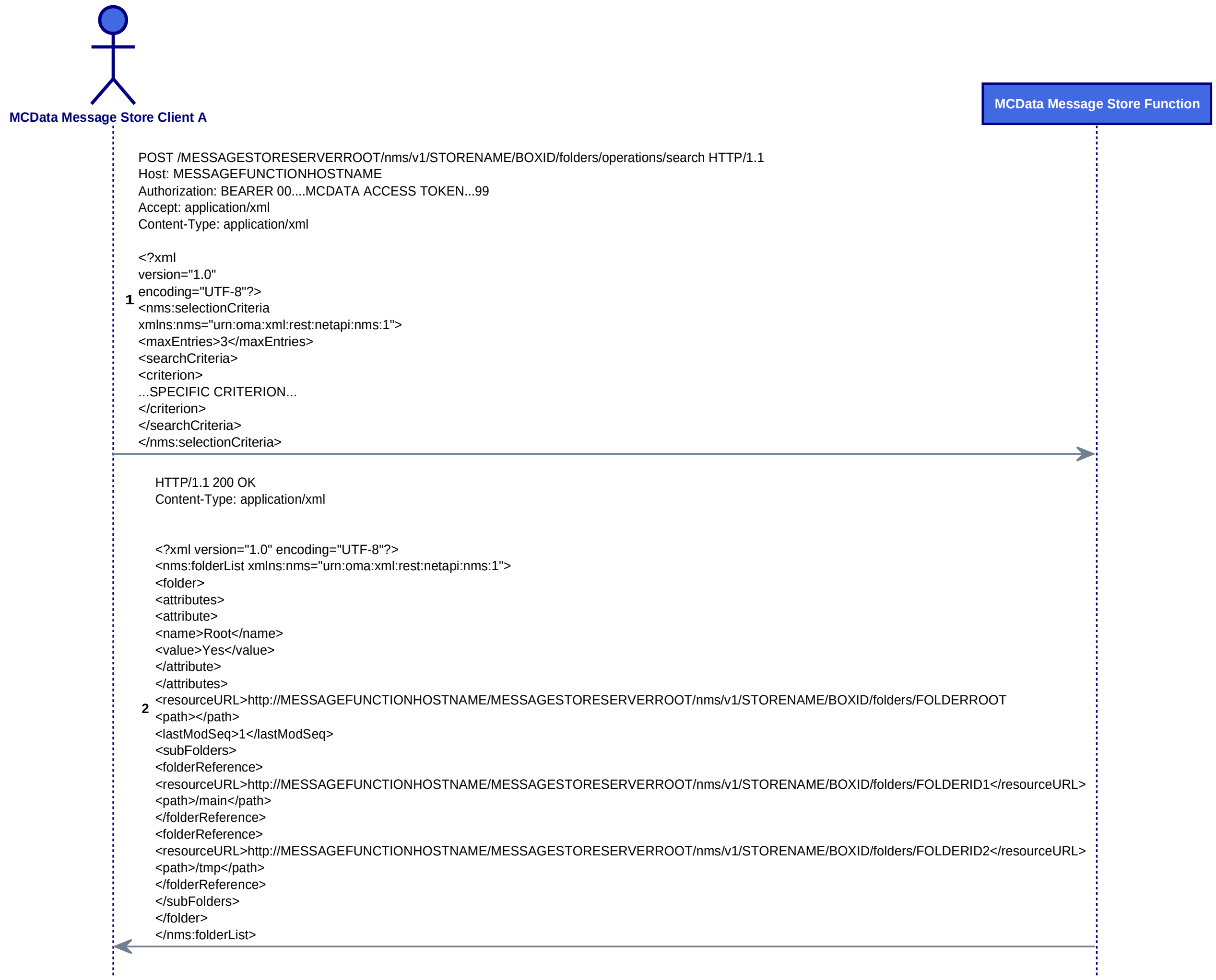

Figure 122mn: MCDATAMS/SEARCH/02 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 144: MCDATAMS/SEARCH/02 ITD

Interoperability Test Description			
Identifier	MCDATAMS/SEARCH/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client to search for information about a selected set of folders		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store client in the MCData client sent the request to search for information about a set of folders using POST and specific search criteria
	2	check	200 OK response
	3	verify	XML encoded search result information retrieved

7.16.11 MCData message store client subscribes to changes in the store [MCDATAMS/SUBS/01]

As defined in clause 21.2.12A.1 in ETSI TS 124 282 [8] the message store client, in order to keep its local store in sync with the MCData message store, it needs to receive notifications about changes.

The synchronization mechanisms uses subscriptions and notification as described in clause 5.1.5.1 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44]. More specifically, to subscribe to such changes the MCData message store client will generate, according to the procedure described in clause 6.20.5 of [44], an HTTP POST request as specified in clause 6.16.5 towards the MCData store function with the Host header field set to a hostname identifying the message store function. The request shall include a valid MCData access token in the HTTP Authorization header and will include the notifyurl for the future notifications.

Upon receipt of an HTTP 201 response with a copy of the created subscription -with its new ID-, the message store client shall follow the procedure described in clause 6.20.2 in [44].

Message Sequence Diagram

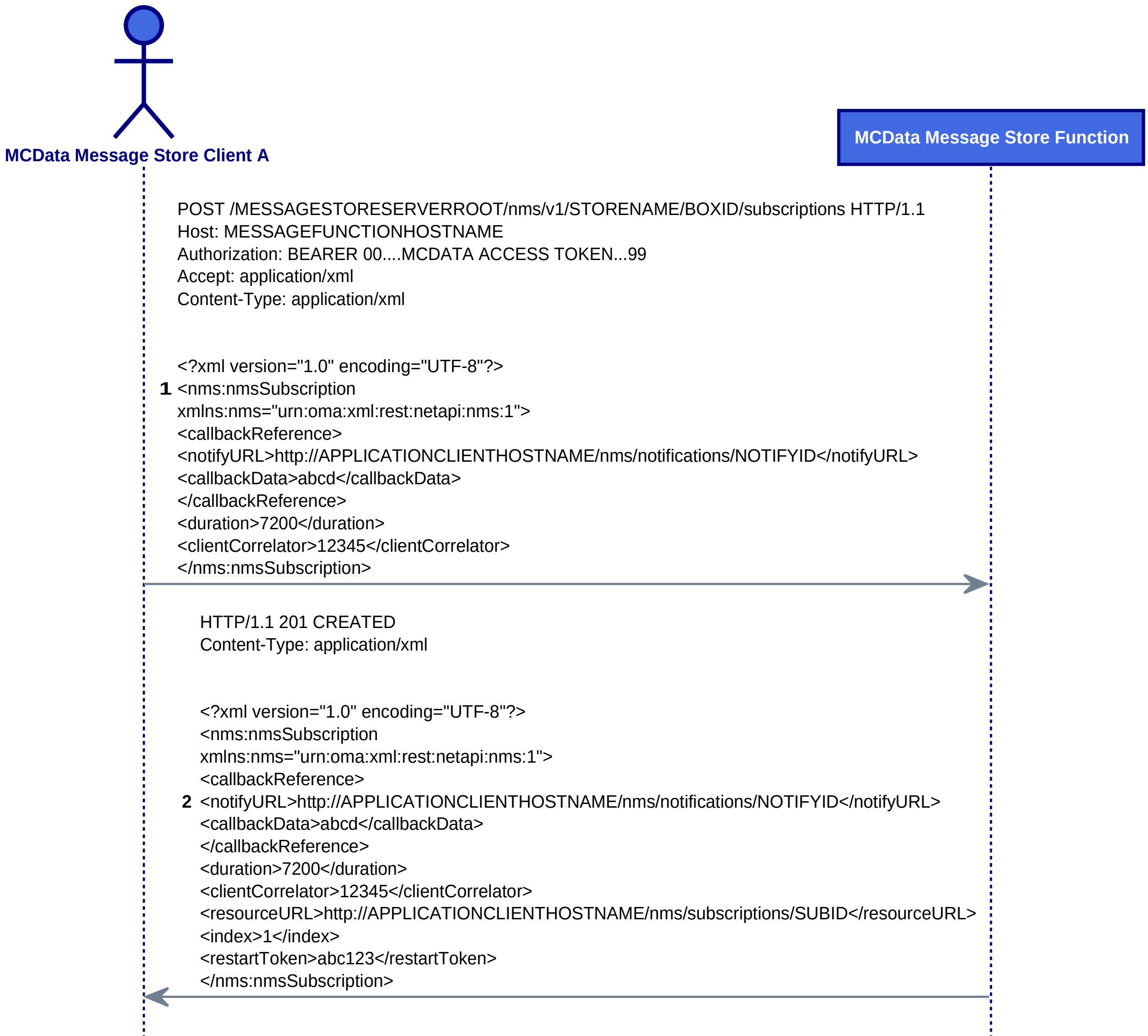

Figure 122mo: MCDATAMS/SUBS/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 145: MCDATAMS/SUBS/01 ITD

Interoperability Test Description			
Identifier	MCDATAMS/SUBS/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client to subscribe for changes in the store		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store client in the MCData client subscribes to changes in the
	2	check	201 CREATED response
	3	verify	New subscription created

7.16.12 MCData message store client cancels the subscription to changes in the store [MCDATAMS/SUBS/02]

As defined in clause 21.2.13A.1 in ETSI TS 124 282 [8] the message store client, in order to delete / cancel a subscription (i.e. that created in [MCDATAMS/SUBS/01]) and stop corresponding notifications about changes in the message store, shall follow clause 6.21 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44].

The MCData store client will use a HTTP DELETE request as described in clause 6.21.5 of [44] towards the MCData store function with the Host header field set to a hostname identifying the message store function and subscc.

Upon receipt of an HTTP 204 response, the message store client shall follow the procedure described in clause 6.21.2 in [44].

Message Sequence Diagram

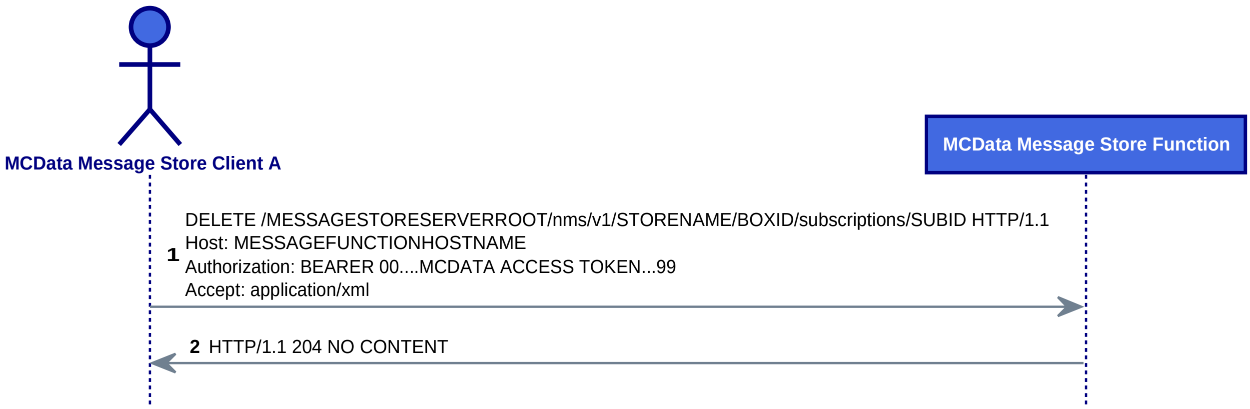

Figure 122mp: MCDATAMS/SUBS/02 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 146: MCDATAMS/SUBS/02 ITD

Interoperability Test Description			
Identifier	MCDATAMS/SUBS/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client to cancel the subscription to changes in a folder		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store client in the MCData client deletes a subscription by using the DELETE HTTP method
	2	check	204 NO CONTENT received
	3	verify	Subscription -identified by SUBID- deleted

7.16.13 MCData message store client updates a subscription to changes in the store [MCDATAMS/SUBS/03]

As defined in clause 21.2.14A.1 in ETSI TS 124 282 [8] the message store client, in order to update an existing subscription to either/both extend the subscription life and restart the notification stream, shall follow clause 6.21 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44].

The MCData store client will use a HTTP POST request as described in clause 6.20.5, an HTTP POST request as specified in clause 6.21.5 of [44] towards the MCData store function with the Host header field set to a hostname identifying the message store function.

Upon receipt of an HTTP 200 response, the message store client shall follow the procedure described in clause 6.21.2 in [44].

Message Sequence Diagram

Figure 122mq: MCDATAMS/SUBS/03 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 147: MCDATAMS/SUBS/03 ITD

Interoperability Test Description			
Identifier	MCDATAMS/SUBS/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client to update a subscription for changes in a store		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store client in the MCData client deletes a subscription by using the DELETE HTTP method
	2	check	204 NO CONTENT received
	3	verify	Subscription -identified by SUBID- deleted

7.16.14 MCData message store client uploads an object [MCDATAMS/UP/01]

As defined in clause 21.2.15.1 in ETSI TS 124 282 [8] in order to upload object(s) in the message store, the message store client, acting as an HTTP client, shall either follow the procedure described in clause 6.1, for single upload, or 6.10 for bulk uploads of objects, both from OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44]. In this test case uploading an individual object only will be (bulk upload is considered For Further Study).

The MCData store client will generate an HTTP POST request as specified in clause 6.1.5 in [44] towards the MCData store function with the Host header field set to a hostname identifying the message store function. Upon receipt of an HTTP response, the message store client shall follow the procedure described in clause 6.1.2 in [44].

In figure 12mr the simplest case of upload (i.e. Object creation by parentFolder, response with a location of created resource as in section 6.1.5.1 in [44]) will be shown.

Message Sequence Diagram

Figure 122mr: MCDATAMS/UP/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 148: MCDATAMS/UP/01 ITD

Interoperability Test Description			
Identifier	MCDATAMS/UP/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client to upload an object		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store client in the MCData client uploads a single object using the POST HTTP method
	2	check	201 CREATED response with the URL (and object ID) of the new object
	3	verify	Object properly uploaded

7.16.15 MCData message store function sends a notification of changes [MCDATAMS/SYNC/01]

As defined in clause 21.2.16 in ETSI TS 124 282 [8] the MCData message store, in order to send notifications about changes in the message store after successful prior subscription following [MCDATA/SUBS/01], will follow the procedures described in clause 6.22 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44].

More specifically, it will generate an HTTP POST request as specified in clause 6.22.5 in [44] towards the MCData store client provided callback URL (set in the Host header field) set to a hostname identifying the message store function.

Upon receipt of an HTTP response (204 No content in the example below) the message store client shall follow the procedure described in clause 6.22.2 in [44]. Note that for simplicity purposes in the diagram the Message Store Client has been depicted as "host of the notifyURL". Whether this is the case or some other third party is the destination is out of scope of the present document.

Message Sequence Diagram

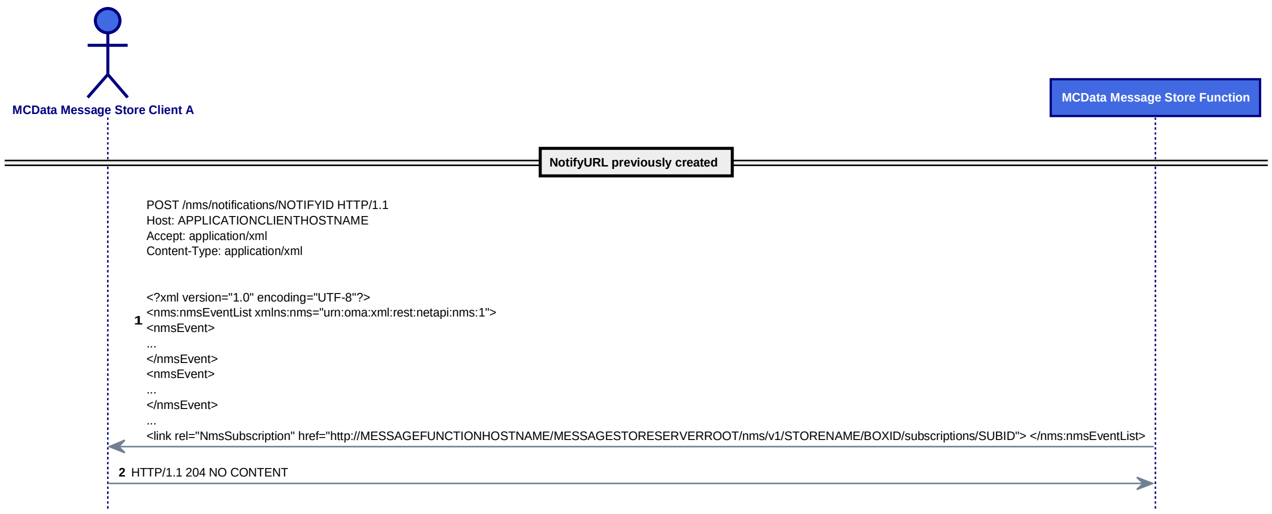

Figure 122ms: MCDATAMS/SYNC/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 149: MCDATAMS/SYNC/01 ITD

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">MCDATAMS/SYNC/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store function to submit a notification of changes</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• MCData-Client_ONN-MCData-MS
• MCData-MS Function</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• 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
• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="4">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>MCData message store function notifies about changes in the message store using POST HTTP method to the notifyURL previously exchanged</td></tr>
<tr><td>2</td><td>check</td><td>201 CREATED response</td></tr>
<tr><td>3</td><td>verify</td><td>Store client properly notified about changes</td></tr>
</table>

7.16.16 MCData message store client searches for changes [MCDATAMS/SYNC/02]

As defined in clause 21.2.17 in ETSI TS 124 282 [8] the MCData message store client, in order to search for changes in the message store, will follow the procedures described in clause 21.2.2.1 in ETSI TS 124 282 [8] (evaluated already in test case [MCDATAMS/SEARCH/01]) but using specific search Criterion in the HTTP POST (namely "CreatedObjects", "VanishedObjects", "Flag").

Message Sequence Diagram

Figure 122mt: MCDATAMS/SYNC/02 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 150: MCDATAMS/SYNC/02 ITD

Interoperability Test Description			
Identifier	MCDATAMS/SYNC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client search for changes		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store clients searches for changes in the store by sending a POST HTTP request with specific criteria
	2	check	200 OK response
	3	verify	Store client properly notified about changes

7.16.17 MCData message store client lists subfolders of a folder [MCDATAMS/LIST/01]

As defined in clause 21.2.18.1 in ETSI TS 124 282 [8] the MCData message store client, in order to list subfolders of a given folder, will follow the procedures described in the clause 6.14 of of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44] and send an HTTP GET request towards the MCData store function with the query string "listFilter" set to "Subfolders", "Objects" or "All" if subfolders only, objects only or all information is to be retrieved. Host header field will be set to a hostname identifying the message store function and a valid MCData access token in the HTTP Authorization header.

Upon receipt of the HTTP response, the message store client should follow the procedure as described in clause 6.14.2 in [44].

Message Sequence Diagram

Figure 122mu: MCDATAMS/LIST/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 151: MCDATAMS/LIST/01 ITD

Interoperability Test Description			
Identifier	MCDATAMS/LIST/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the MCData message store client to list subfolders of a folders		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store clients list all content of a folder by using the GET HTTP request method with the proper query string
	2	check	200 OK response with the resulting XML
	3	verify	Store client properly receives the full content of the folder

7.16.18 Message notification client in the MCData Client creates a notification channel [MCDATAMS/NOTCH/01]

As defined in clause 21.2.19 in ETSI TS 124 282 [8] to create a notification channel, the Message notification client, acting as an HTTP client shall follow the procedure described in clause 6.1.5 of OMA-TS-REST_NetAPI_NotificationChannel-V1_0-20200319-C [45] and send an HTTP POST, with the Host header field set to a hostname identifying the MCData Notification server and including a valid MCData access token in the Authorization header.

Upon receipt of the HTTP POST the MCData Notification server acting as an HTTP server, shall validate the MCData access token and process the HTTP POST request by following the procedures described in clause 6.1.5 of OMA-TSREST_NetAPI_NotificationChannel-V1_0-20200319-C [45]. Therefore it shall generate and send an HTTP response towards the Message notification client indicating the result of the operation, including a Callback URL and also a Channel URL depending on the "channelType". The Callback URL will be later used by the message store client in its request for creation of subscription to notifications sent towards the Message store function as described in clause 21.2.12A of [45].

NOTE: The format of USERID and the ChannelType –also related to the Message store callback reference- need further clarification.

Message Sequence Diagram

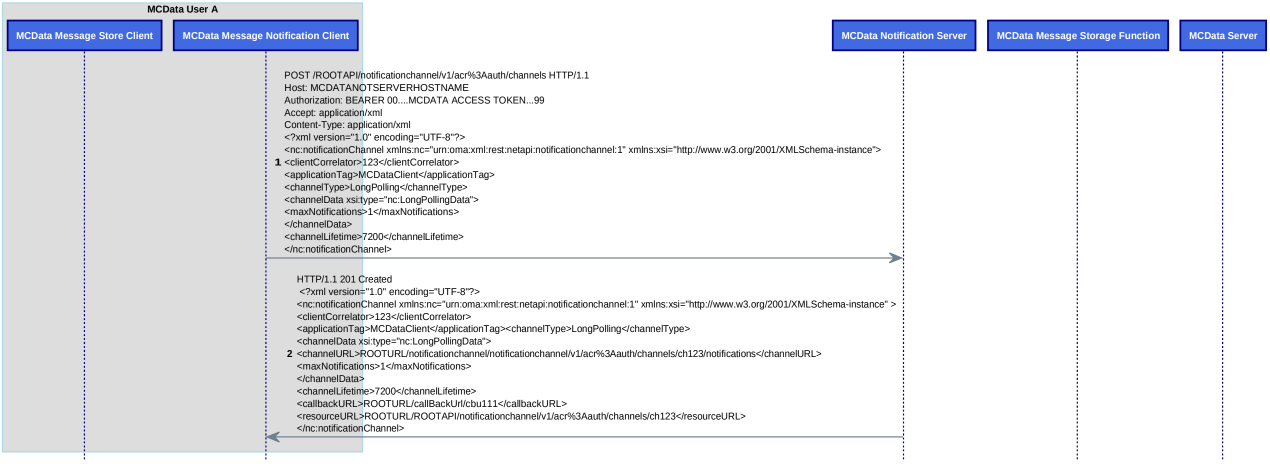

Figure 122mv: MCDATAMS/NOTCH/01 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 152: MCDATAMS/NOTCH/01 ITD

Interoperability Test Description			
Identifier	MCDATAMS/NOTCH/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the Message notification client and function to create a notification channel		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function • MCData-Client_ONN-MCData-MNC		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store client sends a request to the Notification server to create a new notification channel
	2	check	201 OK response with the resulting XML
	3	verify	Notification channel properly created

7.16.19 Message notification client in the MCData Client deletes a notification channel [MCDATAMS/NOTCH/02]

As defined in clause 21.2.20 in ETSI TS 124 282 [8] to delete a previously created notification channel, the Message notification client, acting as an HTTP client shall follow the procedure described in clause 6.2 of OMA-TS-REST_NetAPI_NotificationChannel-V1_0-20200319-C [45] and send an HTTP DELETE, with the Host header field set to a hostname identifying the MCData Notification server and including a valid MCData access token in the Authorization header.

Upon receipt of the HTTP DELETE the MCData Notification server acting as an HTTP server, shall validate the MCData access token and process the request by following the procedures described in clause 6.2.6 of OMA-TSREST_NetAPI_NotificationChannel-V1_0-20200319-C [45]. Therefore it shall generate and send an HTTP 204 response towards the Message notification client.

Message Sequence Diagram

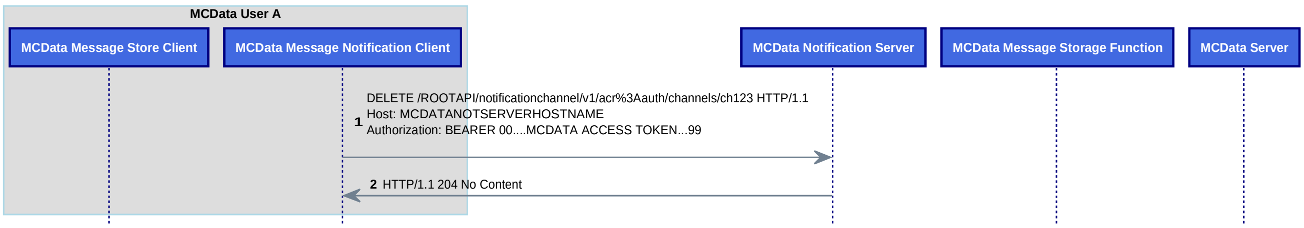

Figure 122mw: MCDATAMS/NOTCH/02 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 153: MCDATAMS/NOTCH/02 ITD

Interoperability Test Description			
Identifier	MCDATAMS/NOTCH/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the Message notification client and function to delete an existing notification channel		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function • MCData-Client_ONN-MCData-MNC		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id • Notification channel previously created		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData notification client sends a request to the Notification server to delete a previously created notification channel
	2	check	201 OK response with the resulting XML
	3	verify	Notification channel properly deleted

7.16.20 Message notification client in the MCData Client updates a notification channel [MCDATAMS/NOTCH/03]

As defined in clause 21.2.21 in ETSI TS 124 282 [8] to update the lifetime of a previously created notification channel, the Message notification client, acting as an HTTP client shall follow the procedure described in clause 6.4.4 of OMA-TS-REST_NetAPI_NotificationChannel-V1_0-20200319-C [45] and send an HTTP PUT, with the Host header field set to a hostname identifying the MCData Notification server and including a valid MCData access token in the Authorization header.

Upon receipt of the HTTP PUT the MCData Notification server acting as an HTTP server, shall validate the MCData access token and process the request by following the procedures described in clause 6.4.4 of OMA-TSREST_NetAPI_NotificationChannel-V1_0-20200319-C [45]. Therefore it shall generate and send an HTTP 200 response towards the Message notification client.

The Message notification client should then follow the procedure described in clause 6.4.4 of OMA-TS-REST_NetAPI_NotificationChannel-V1_0-20200319-C [45] and update the channel lifetime accordingly (i.e. a successful HTTP response includes the new Channel's lifetime duration which can be used by the Message store client to update the lifetime of the notification subscription in the MCData message store function as described in clause 21.2.14A in ETSI TS 124 282 [8]).

Message Sequence Diagram

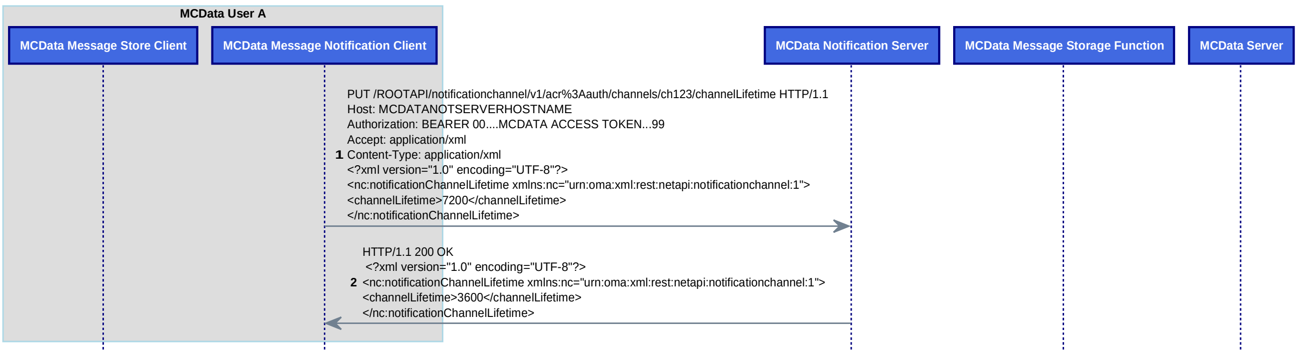

Figure 122mx: MCDATAMS/NOTCH/03 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 154: MCDATAMS/NOTCH/03 ITD

Interoperability Test Description			
Identifier	MCDATAMS/NOTCH/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the Message notification client and function to update the lifetime of an existing notification channel		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function • MCData-Client_ONN-MCData-MNC		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id • Notification channel previously created		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData notification client sends a request to the Notification server to update a previously created notification channel
	2	check	200 OK response with the resulting XML
	3	verify	Notification channel lifetime properly updated

7.16.21 Message notification client in the MCData Client opens a notification channel [MCDATAMS/NOTCH/04]

As defined in clause 21.2.22 in ETSI TS 124 282 [8] the Message notification client the Message notification client will determine if and how it needs to open (interact with) the created channel for notification flow (i.e. using PULL or PUSH). Then, to open the notification channel for a PULL notification delivery method (i.e. created channel is of type LongPolling) the Message notification client, acting as an HTTP client shall follow the procedure described in clause 6.3.5 of OMA-TS-REST_NetAPI_NotificationChannel-V1_0-20200319-C [45] and send an HTTP POST using the channelURL received from the MCData Notification server during channel creation procedure (see [MCDATAMS/NOTCH/01], with the Host header field set to a hostname identifying the MCData Notification server and including a valid MCData access token in the Authorization header.

Upon receipt of the HTTP POST the MCData Notification server acting as an HTTP server, shall validate the MCData access token and process the request by following the procedures described in clause 6.3.5 of OMA-TSREST_NetAPI_NotificationChannel-V1_0-20200319-C [45]. Therefore it shall generate and send an HTTP response towards the Message notification client.

The Message notification client should then follow the procedure as described in clause 6.3.2 of OMA-TS-REST_NetAPI_NotificationChannel-V1_0-20200319-C [45] and either use the notification content and the reported "restartToken" and "index" as specified in clause 5.1.5.1 of OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C [44] to have the client's local message store updated accordingly, or use the notification as a trigger to subsequently search the MCData message store for the list of changes as specified in clause 21.2.17 in ETSI TS 124 282 [8].

NOTE: Single notification delivered in a NotificationList example in of OMA-TS-REST_NetAPI_NotificationChannel-V1_0-20200319-C [45] is depicted without specific XML content to enable any abovementioned behaviour in the client side.

Message Sequence Diagram

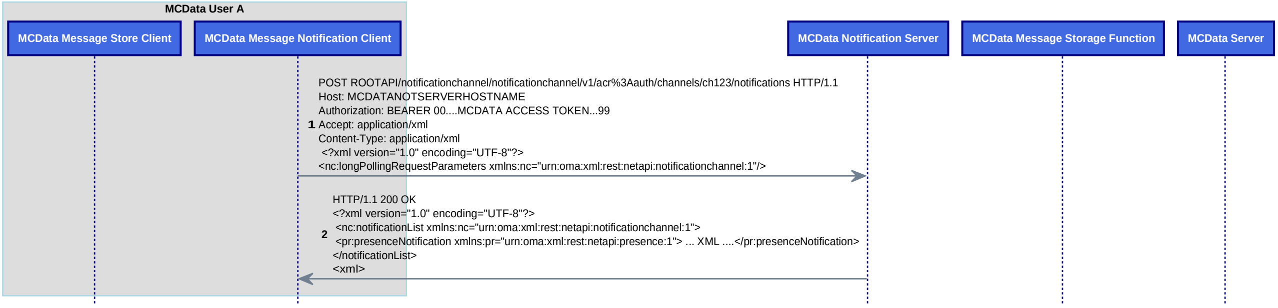

Figure 122my: MCDATAMS/NOTCH/04 Message Sequence

Message Details

```
Trace Pending
```

Interoperability Test Description

Table 155: MCDATAMS/NOTCH/04 ITD

Interoperability Test Description			
Identifier	MCDATAMS/NOTCH/04		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the Message notification client and function to open a notification channel to poll for a notification		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function • MCData-Client_ONN-MCData-MNC		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id • Notification channel previously created		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData notification client sends a request to the Notification server to poll for notification(s) in an created notification channels
	2	check	200 OK response with the resulting XML
	3	verify	Notification properly handled in the client side

7.16.22 MCData message store function sends a notification of changes using notification channel [MCDATAMS/SYNC/03]

As defined in clause 21.2.16.2 in ETSI TS 124 282 [8] if the Message store client is not using an in-band connection with the MCData message store to receive notifications and has instead created a notification channel with the MCData notification server then the message store client shall not follow the procedure in this clause and instead follow the procedure described in clause 21.2.22 in ETSI TS 124 282 [8] "Open notification channel" in order to start receiving the notifications (about changes in the message store).

As defined in clause 21.2.16.2 in ETSI TS 124 282 [8] If the callback URL in the HTTP POST request, as described in clause 21.2.16.1 in ETSI TS 124 282 [8], points to the MCData Notification server then upon receipt of the request from the MCData message store, the MCData notification server acting as an HTTP server shall process the HTTP POST reques and shall make the notifications available to the message notification client (and hence the message store client) through the associated channel which was previously created and opened.

Therefore,as depicted, this test case covers a combination of [MCDATAMS/SYNC/01] and of [MCDATAMS/NOTCH/04].

Message Sequence Diagram

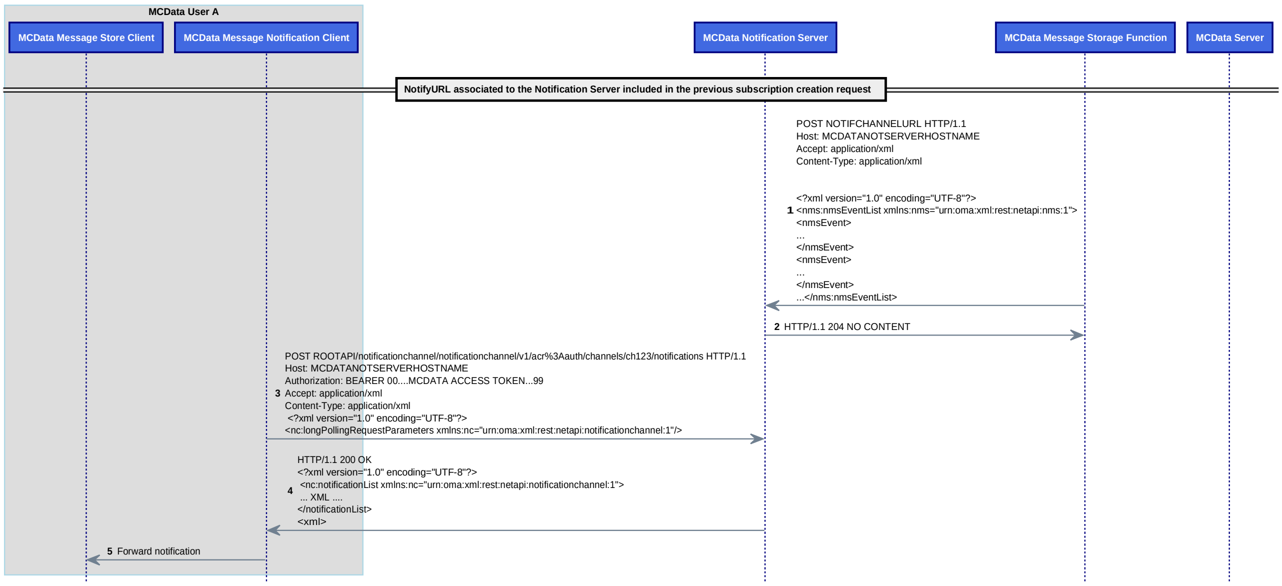

Figure 122mz: MCDATAMS/SYNC/03 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 156: MCDATAMS/SYNC/03 ITD

Interoperability Test Description			
Identifier	MCDATAMS/SYNC/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, signalling for the Message Store function to synchronize using notifications through the Notification Server		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCData-Client_ONN-MCData-MS • MCData-MS Function • MCData-Client_ONN-MCData-MNC		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcdata_id • Notification channel previously created • Subscription with proper Notification URL forwarded to the Message Store Function		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCData message store function sends an update to the Notification server
	2	check	204 Created positive response
	3	check	MCData notification client sends a request to the Notification server to poll for notification(s) in an created notification channels
	4	check	200 OK response with the resulting XML
	3	verify	Notification properly handled in the client side

8 eMBMS complementary test cases (informative)

8.1 Introduction (disclaimer)

During the preparation of the test cases for the 2nd 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 than 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 4th 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

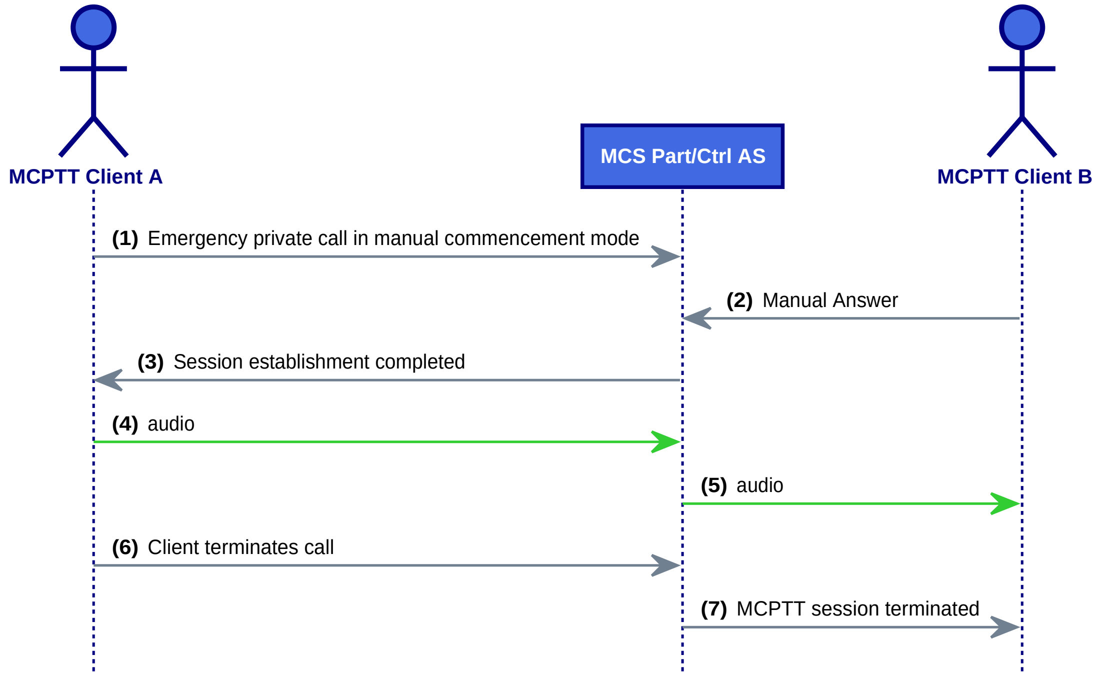

Figure 123: OS1 Message Sequence

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

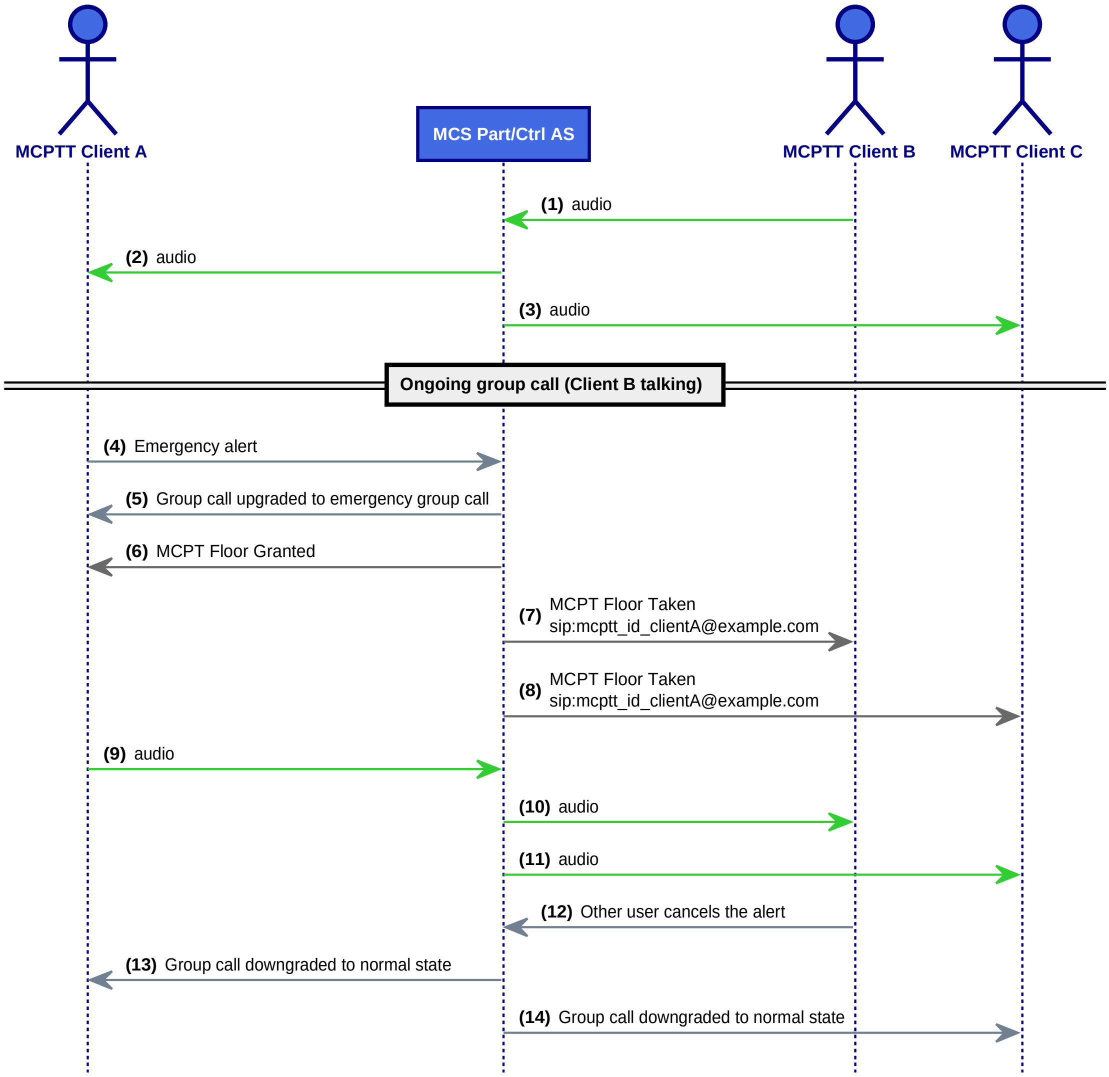

Figure 124: OS2 Message Sequence

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

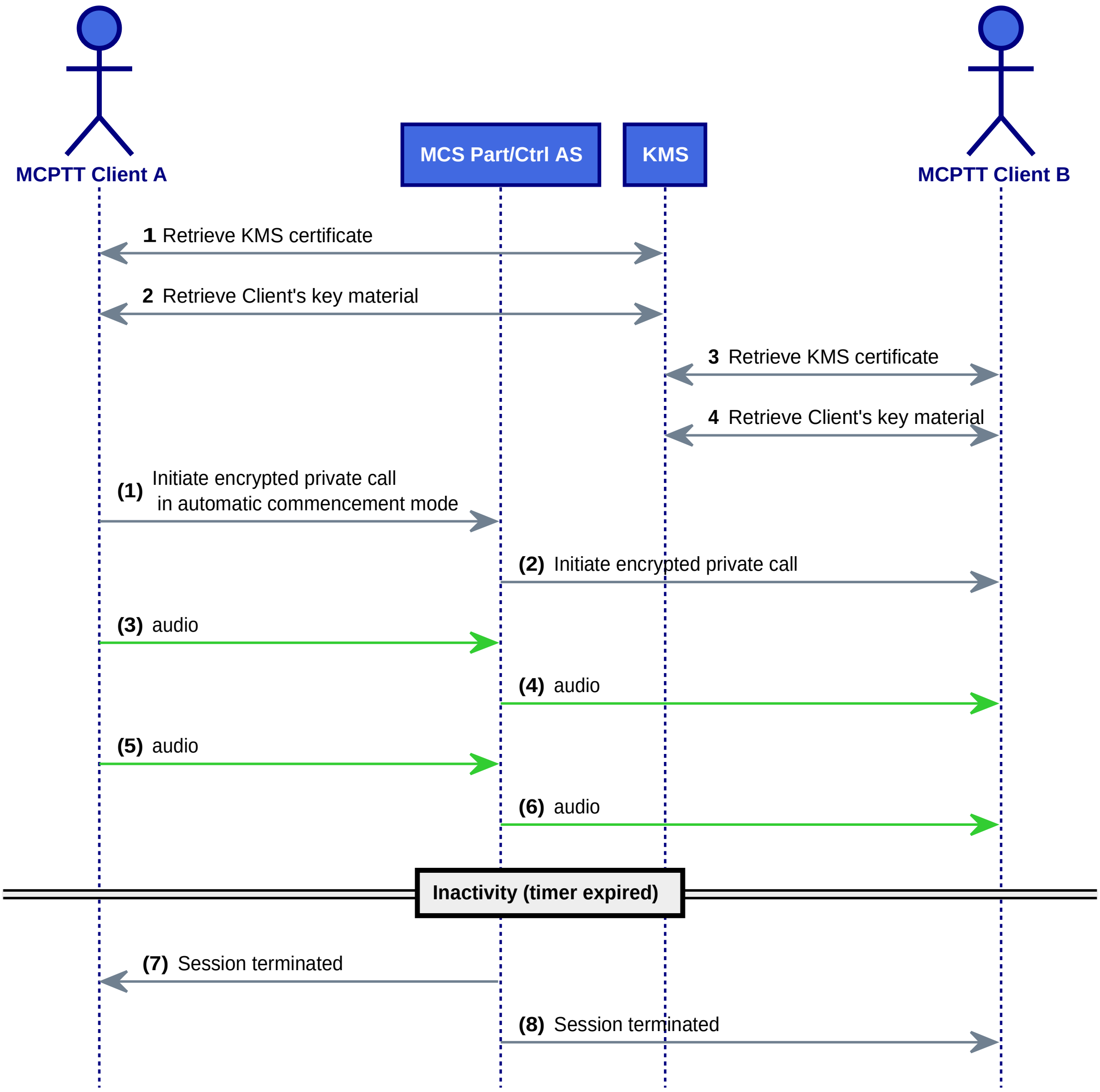

Figure 125: OS3 Message Sequence

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

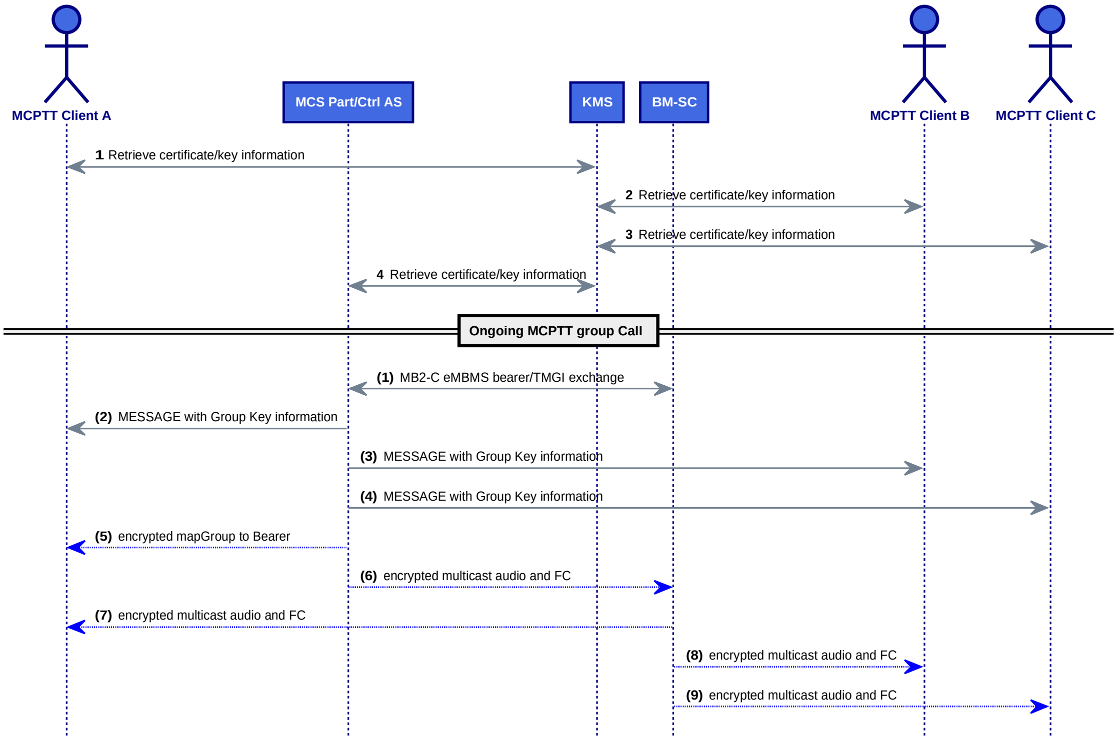

Figure 126: OS4.1 Message Sequence

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

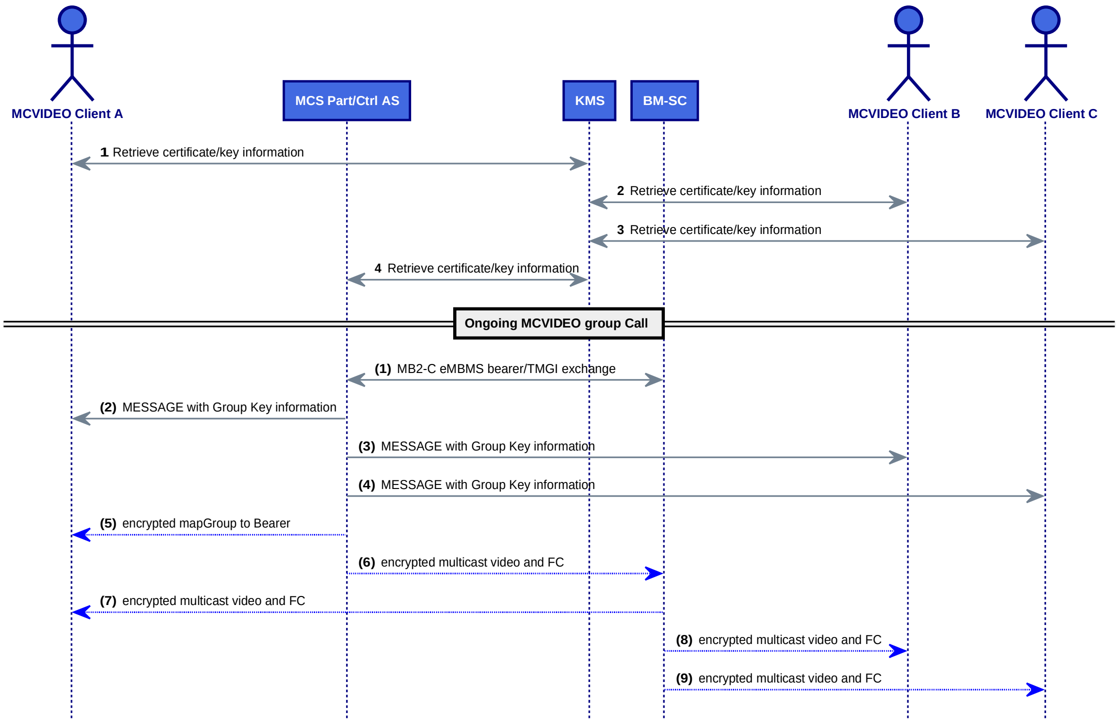

Figure 127: OS4.2 Message Sequence

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

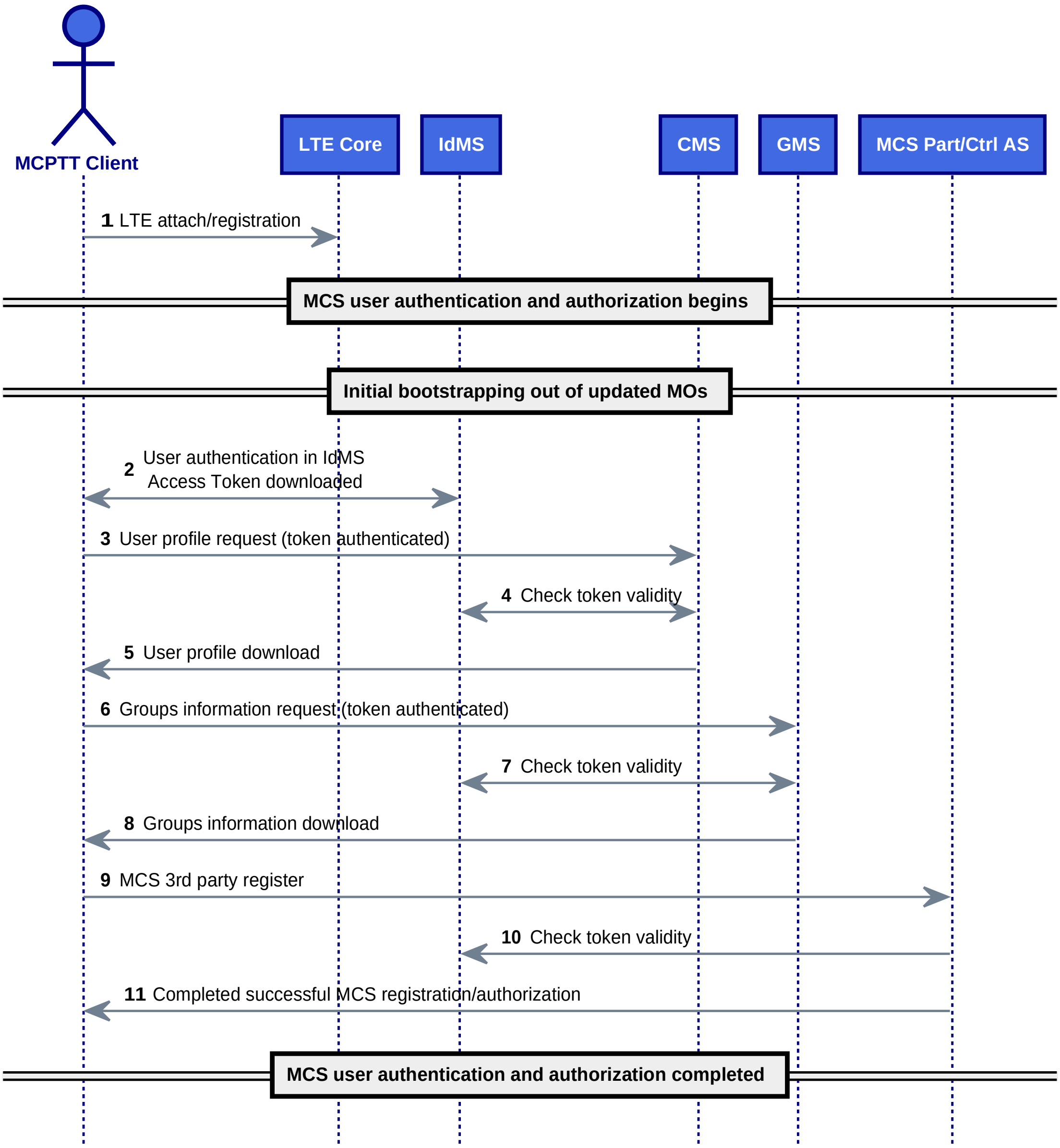

Figure 128: OS5 Message Sequence

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

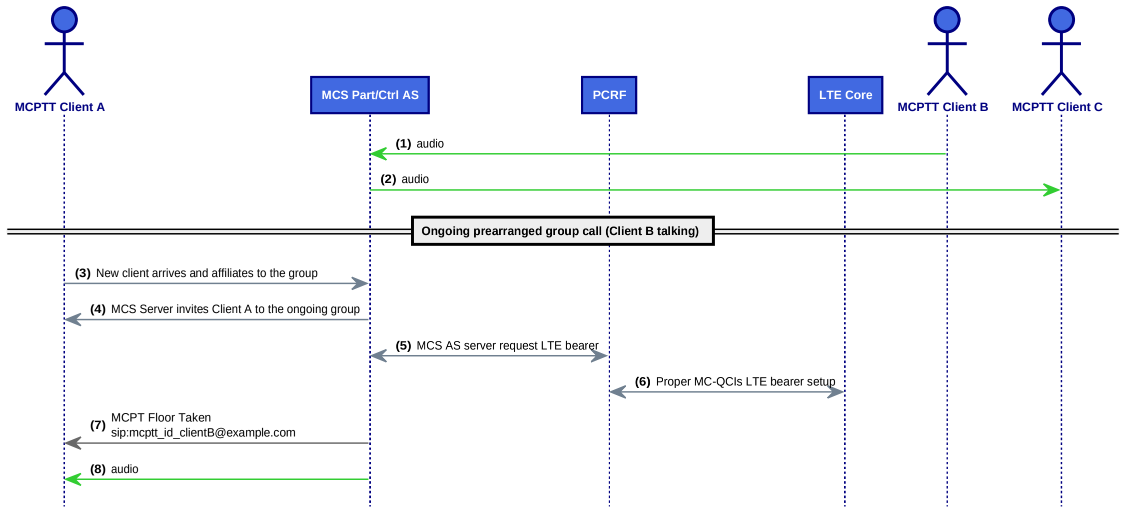

Figure 129: OS6 Message Sequence

9.10 Enhanced status [OS7.1]

This scenario is For Further Study 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

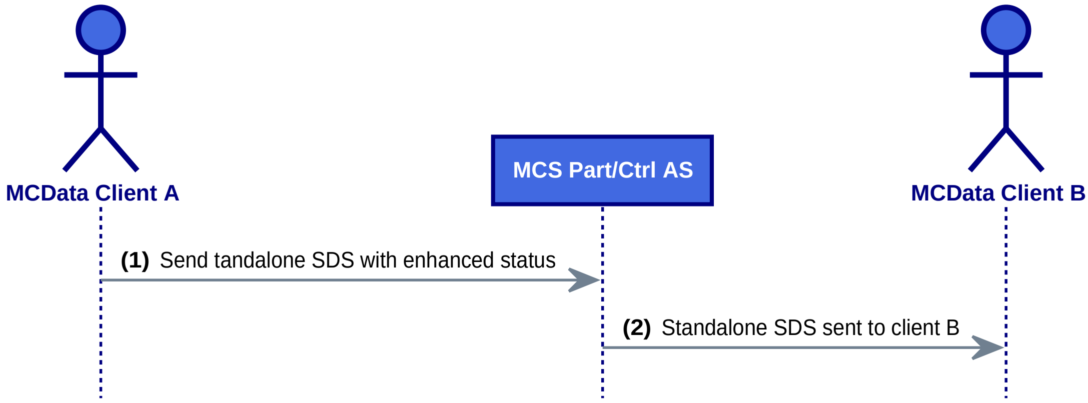

Figure 130: OS7.2 Message Sequence

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

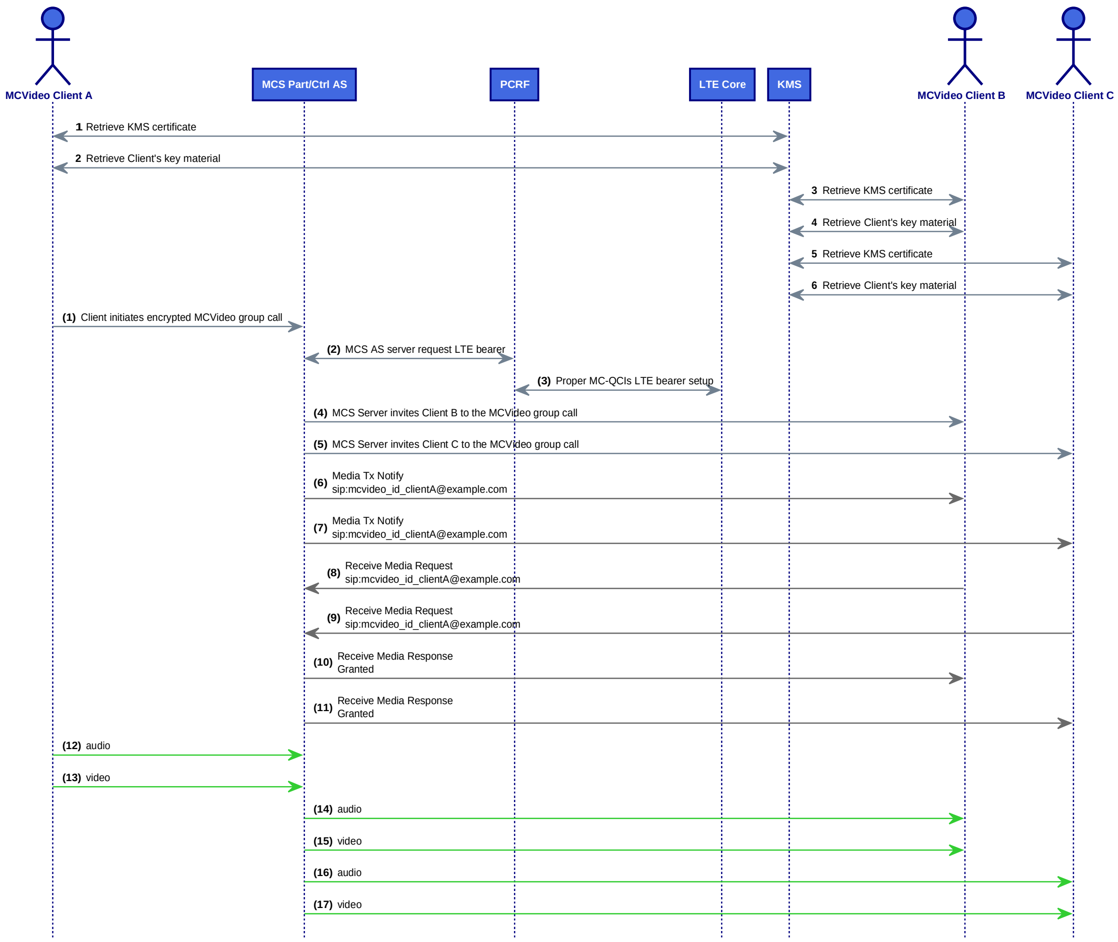

Figure 131: OS8 Message Sequence

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

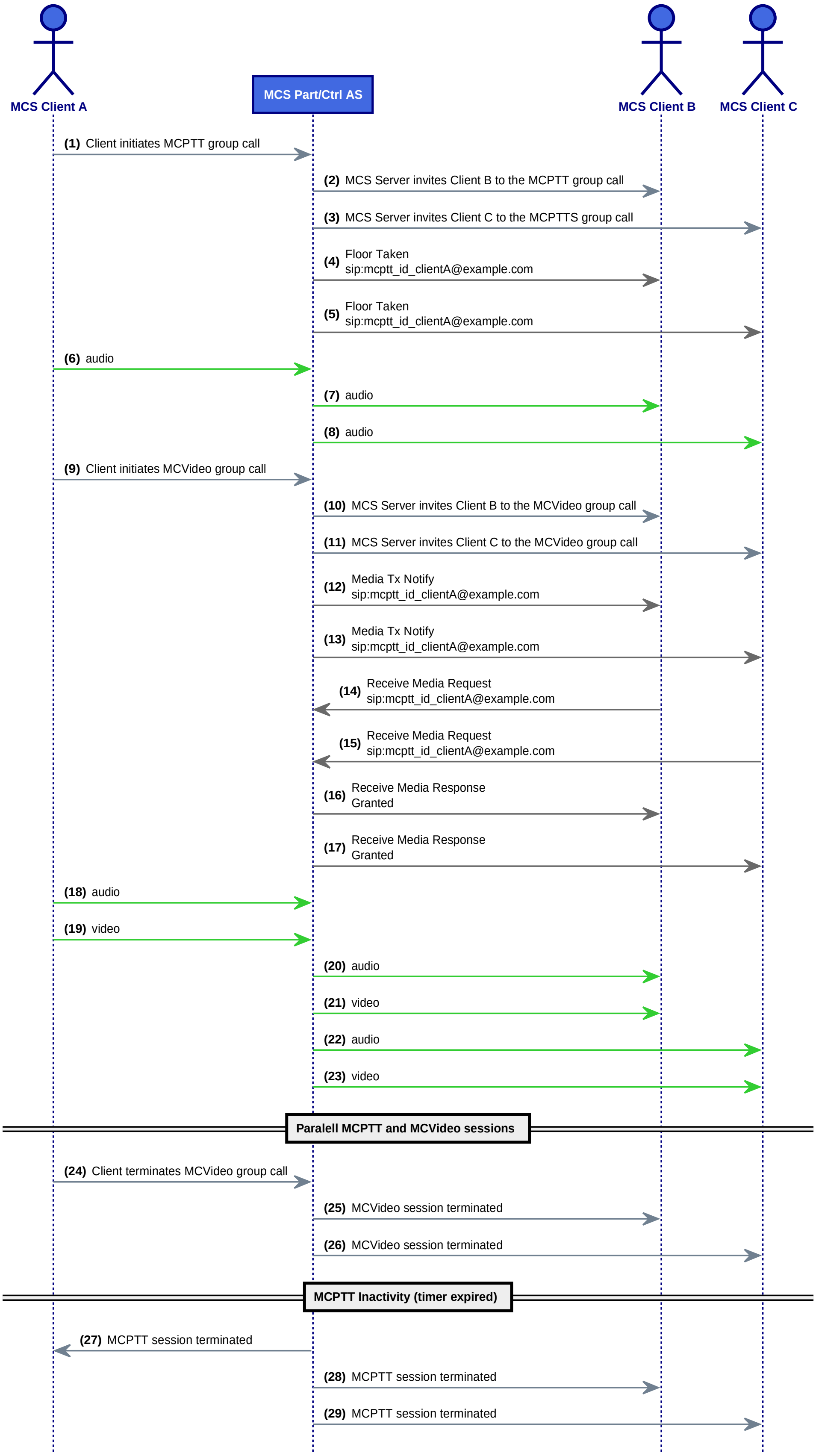

Figure 132: OS9 Message Sequence

9.14 Initiation of the Railway emergency alert [OS10]

The scenario comprises the following steps:

- Before the incident:
  - System pre-configured with emergency alert conditions
- End User presses emergency button
- "FRMCS service" notifies targeted users upon specific criteria (location, speed, type of user, FA) (authorization & QoS is considered as builtin MCS)
- For Further Study: During the incident new users can enter/leave the communication upon (not) fulfilling the criteria

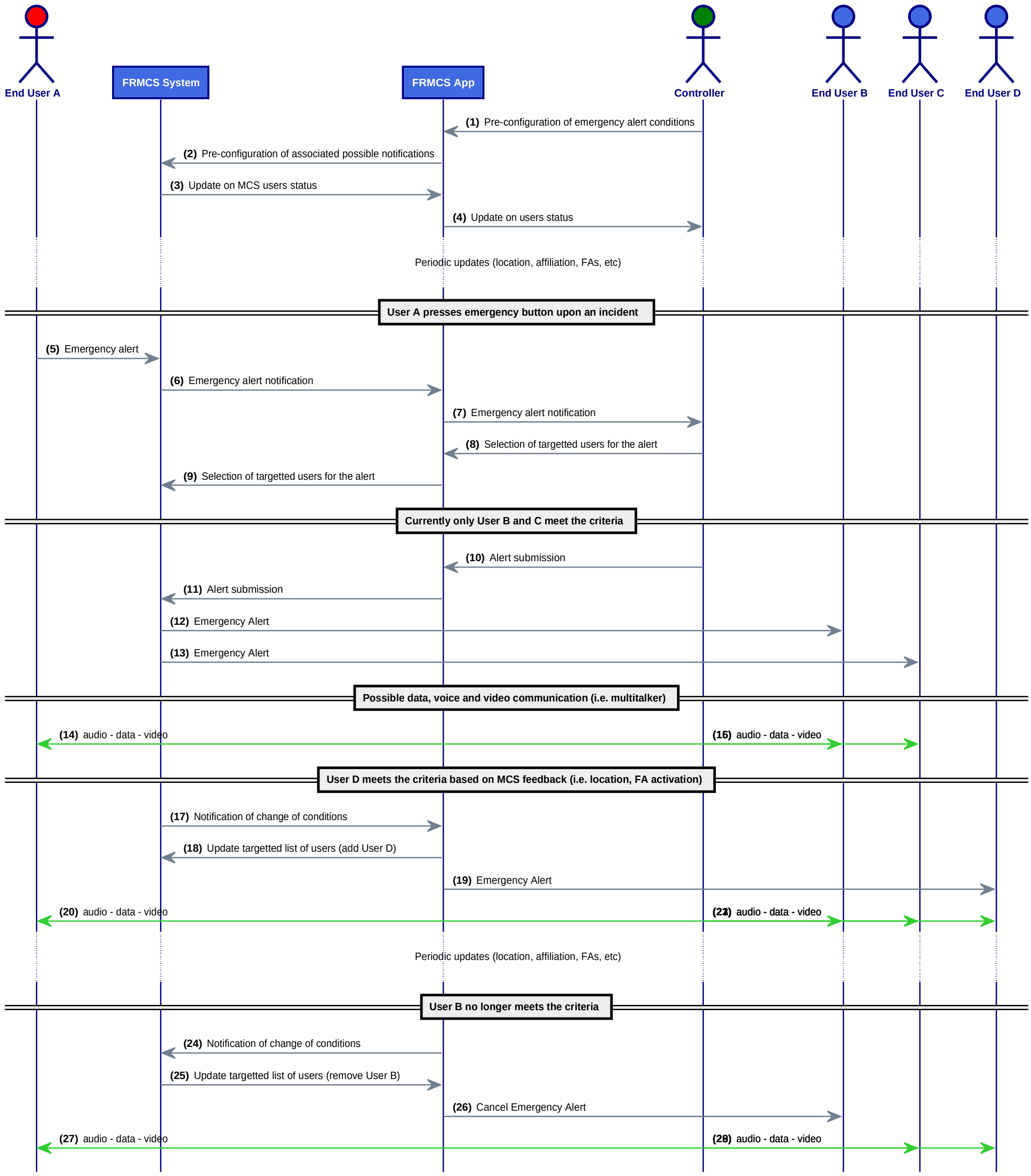

Figure 133: OS10 Message Sequence

10 FRMCS scenarios

10.1 Initiation by a mobile user of a railways emergency communication, client driven, alert and voice call [FRMCS/REC/CLIENT/01]

This railways emergency communication handling test case involves a series of stages comprising pre-configuration of areas, location reporting by clients, update of affiliation based on areas and alert and voice call.

Two different but mutually related types of areas are predefined for the railways emergency communications handling:

- Affected area: Predefined area where the train initiating the communications is located when the emergency/event takes place. Typically the danger would be located in the neighbourhood of this area but not surely inside the areas due to potential delay between danger observation and REC initiation.
- Alerted area: Predefined area where to alert other users when a REC is initiated in the corresponding affected area.

Figure 134 depicts the considered sample geographic areas (polygons), affected and alerted areas and associated group names.

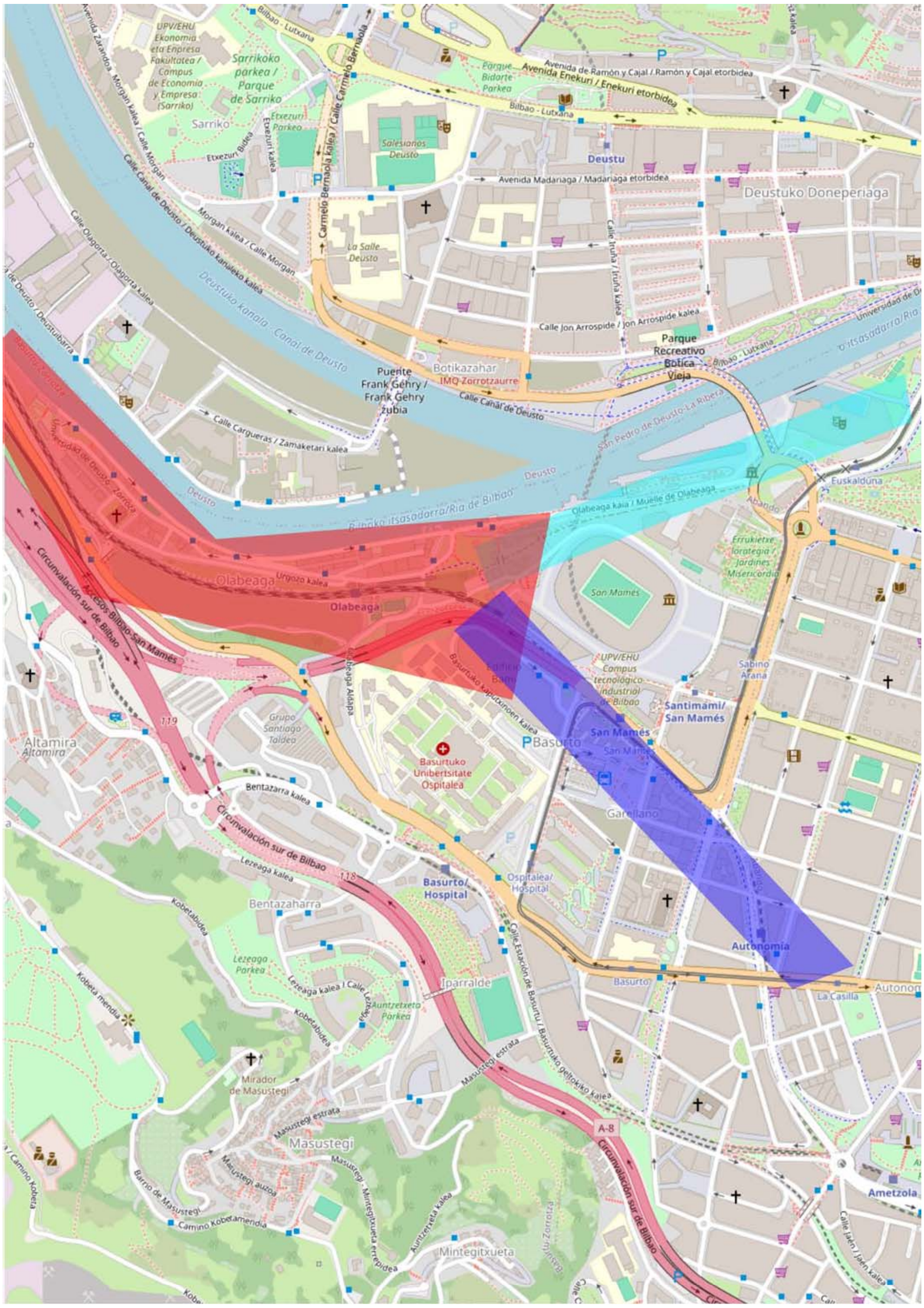

Figure 134: FRMCS emergency communication considered areas (Source: ©OpenStreetMap contributors)

Therefore, in this test case, the areas for which affiliations to those specific groups will be triggered based on location reporting and affiliation rules are pre-provisioned in the participating server(s) (i.e. by using the RulesForAffiliation format defined in user-profile documents -see clause 10.3.2.7 in ETSI TS 124 484 [14] for semantics-).

NOTE 1: In figure 135 both a single participating server and controlling server are depicted for simplicity purposes.

Once all the railway emergency communications handling logic has been properly configured operators and mobile users in the scenario get registered and railways typical operations begin.

Upon location reports by the mobile clients and based on the affiliation rules considering pre-provisioned areas, the participating will generate a SIP MESSAGE request for notification of entry into or exit from a group geographic area following clause 6.3.2.4.2 in ETSI TS 124 379 [9].

NOTE 2: The operation is similar to a Release 17 updated version of [CONN-MCPTT/ONN/EMERG-ALERT/MSG/04]

That SIP MESSAGE shall include an application/vnd.3gpp.mcptt-info+xml MIME body with an <mcpttinfo> element containing the <mcptt-Params> element with an <mcptt-request-uri> element set to the value of the MCPTT ID of the targeted mobile user, an <associated-group-id> element set to the MCPTT group ID of the group for which the 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 in ETSI TS 124 379 [9] may display to the user an indication that a group geographic area has been entered and execute the procedure in clause 9.2.1.2 in ETSI TS 124 379 [9] to affiliate to the group indicated by the participating MCPTT function.

Details of the affiliation procedures can be found in [AFFIL/CHANGE/02].

NOTE 3: Sequential sibling operations for different overlapping alerted & affected areas are considered in figure 135.

Dispatchers (operators) responsible for handling are considered as implicitly affiliated to the assigned alerted and affected areas groups.

When the danger is detected an emergency alert and subsequent emergency group call will be triggered. The alert will be initiated by the mobile User, selecting the target to-be-alerted group using a implementation specific heuristic. In the areas considered in this example scenario such process would include detecting to which affected group the user is currently affiliated and selecting the equivalent REC.alerted group.

Then, the procedures to send an emergency alert are those in [CONN-MCPTT/ONN/EMERG-ALERT/MSG/01].

Finally, the same user or typically the operator/dispatcher will check the conditions of the received emergency alert and initiate a pre-arranged on-demand emergency group call following procedures in [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/02].

Message Sequence Diagram

Figure 135: FRMCS/REC/CLIENT/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 157: FRMCS/REC/CLIENT/01 ITD

Interoperability Test Description	
Identifier	FRMCS/REC/CLIENT/01
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the initiation of an emergency alert and later emergency group call during a railways emergency communications handling situation.
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])

Interoperability Test Description			
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Areas properly configured in the participating • Dispatcher(s) implicitely affiliated		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	Mobile users move freely
	2	check	Location reports arrive at the participating
	3	stimulus	Mobile user(s) enter alerted and affected Area1 areas
	4	check	SIP MESSAGEs forcing affiiliation upon entering geographic area arrived at the mobile users
	5	check	Mobile users successfully affiliate to REC.*.Area1 groups
	6	stimulus	Incident happens and MCS client A sends an emergency alert to REC.alerted.Area1 group
	7	check	SIP MESSAGE arrives at the participating
	8	check	SIP MESSAGE forwarded by the participating arrives at the controlling
	9	check	(n) SIP MESSAGEs created by the controlling and submitted to the geographically-triggered-affiliated mobile users (and to the operator)
	10	check	Emergency alert arrives at all MCS Clients affiliated to the alerted group and an indication of the Emergency alert is shown to the group members
	11	stimulus	Dispatcher initiates a pre-arranged on demand group call to the alerted group by sending a SIP INVITE
	12	check	SIP INVITE forwarded by the participating arrives at the controlling
	13	check	(n) SIP INVITES forwarded to the affiliated members
	14	verify	All members receive the emergency group call and audio is exchanged
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

10.2 Initiation by a mobile user of a railways emergency communication, client driven, combined alert and voice call [FRMCS/REC/CLIENT/02]

This test case is equivalent to [FRMCS/REC/CLIENT/01] but using an <alert-ind> in the originating emergency group call. Therefore it is the original mobile client the responsible for triggering the emergengy call.

Message Sequence Diagram

Figure 136: FRMCS/REC/CLIENT/02 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 158: FRMCS/REC/CLIENT/02 ITD

Interoperability Test Description	
Identifier	FRMCS/REC/CLIENT/02
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the initiation of a combined emergency alert and group call during a railways emergency communications handling situation.
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Areas properly configured in the participating • Dispatcher(s) implicitely affiliated

Interoperability Test Description			
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	Mobile users move freely
	2	check	Location reports arrive at the participating
	3	stimulus	Mobile user(s) enter alerted and affected Area1 areas
	4	check	SIP MESSAGEs forcing affiiliation upon entering geographic area arrived at the mobile users
	5	check	Mobile users successfully affiliate to REC.*.Area1 groups
	6	stimulus	Incident happens and MCS client A sends a combined emergency alert and voice call to REC.alerted.Area1 group
	7	check	SIP INVITE arrives at the participating
	8	check	SIP INVITE forwarded by the participating arrives at the controlling
	9	check	(n) SIP INVITEs created by the controlling and submitted to the geographically-triggered-affiliated mobile users (and to the operator)
	10	check	SIP INVITE arrives at all MCS Clients affiliated to the alerted group and an indication of the Emergency alert is shown to the group members
	11	verify	All members receive the emergency group call with the alert indicator and audio is exchanged
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

10.3 Initiation by a mobile user of a railways emergency communication, server driven, alert and voice call [FRMCS/REC/SERVER/01]

This test case comprises the handling

Unlike [FRMCS/REC/CLIENT/01], the affiliations to the alerted and affected groups are not triggered upon checking the location reports. Instead, the MCS server will evaluate which users will need to be affiliated upon receiving the emergency alert.

In order to do so, the notification of entry into an emergency alert area following clause 6.3.2.4.1 in ETSI TS 124 379 [9] was intended to be used. Therefore, per every user to be affiliated to the targeted REC.alerted.Area1 group a SIP MESSAGE would include an application/vnd.3gpp.mcptt-info+xml MIME body with an <mcpttinfo> element containing the <mcptt-Params> element with an <mcptt-request-uri> element set to the value of the MCPTT ID of the targeted mobile user and a <emergency-alert-area-ind> element set to a value of "true". Later, upon reception of such MESSAGE (clause 12.1.1.6 in ETSI TS 124 379 [9]) receiving user should initiate the alert to the proper group by using the procedure in clause 12.1.1.1 in ETSI TS 124 379 [9].

However, for the FRMCS#2 Plugtest since <associated-group-id> is missing in clause 6.3.2.4.1 in ETSI TS 124 379 [9], no implicit affiliation is added and C1-222074 marked as postponed in C1#134-e waiting for needed Stage 2 CRs different tentative options are considered:

OPTION 1: The original 6.3.2.4.2 mechanism (as in [FRMCS/REC/CLIENT/01] but triggered on emergency initiation time) will be used.

OPTION 2: Following original 6.3.2.4.1 all users receiving notification of entry into an emergency alert area would initiate the emergency alert and carry out the alerted group selection heuristic as in [FRMCS/REC/CLIENT/01] but in the client side (and eventually following NOTE 4: Based on implementation the MCPTT client can subsequently automatically originate an MCPTT emergency group call as specified in clause 10.1.1.2 in ETSI TS 124 379 [9]). Once the proper alerted group is selected and (n) alert are initiated later in the participating (see clause 12.1.2.1, subclause 3 in ETSI TS 124 379 [9])) if the MCPTT user is not affiliated with the MCPTT group as determined by clause 9.2.2.2.11 in ETSI TS 124 379 [9], shall perform the actions specified in clause 9.2.2.2.12 in ETSI TS 124 379 [9] for implicit affiliation.

OPTION 3: Assume <associated-group-id> is included.

NOTE: How the original client triggering the generic alert gets affiliated is For Further Study.

Figure 137 shows example of option 3.

Message Sequence Diagram

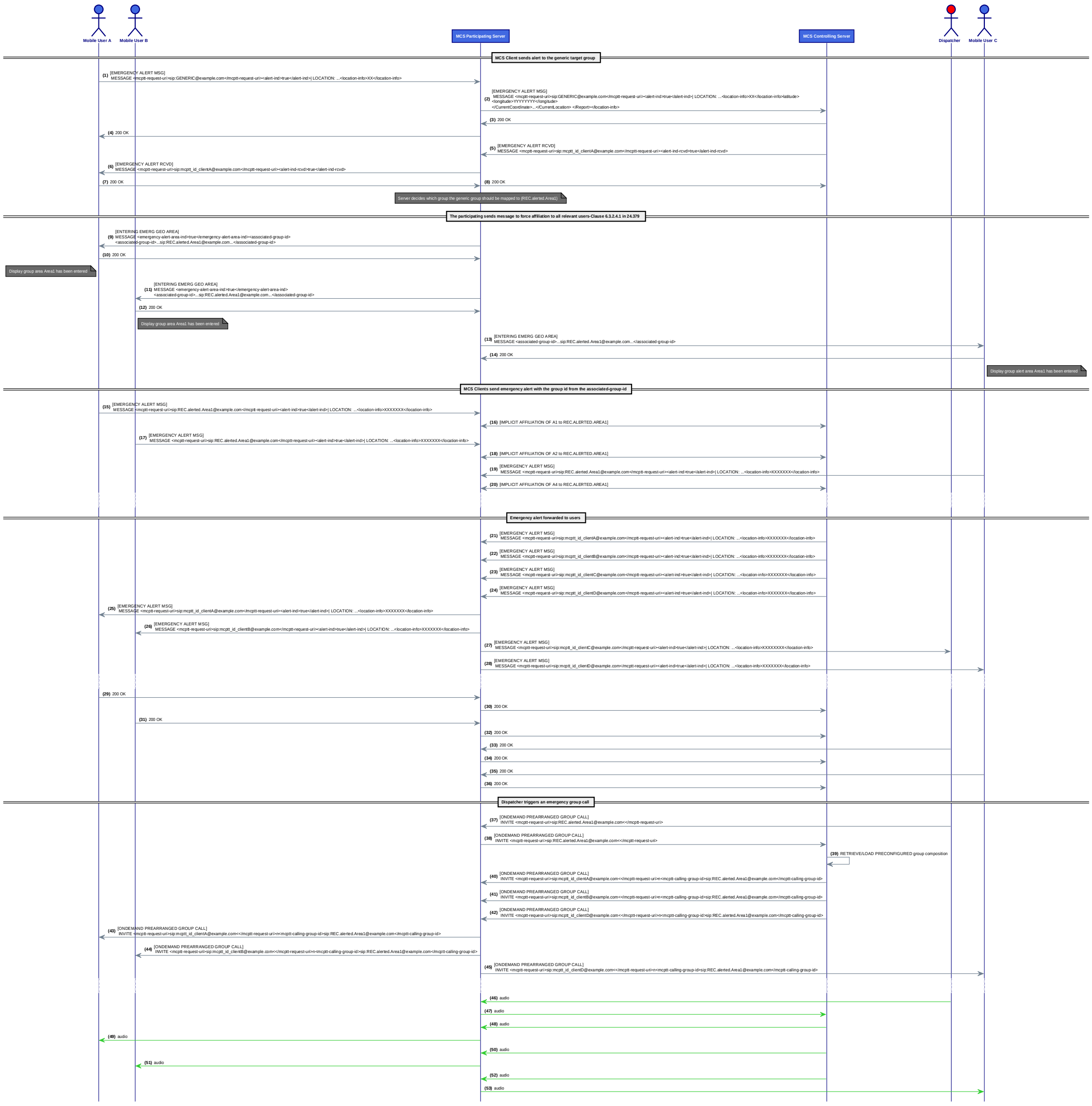

Figure 137: FRMCS/REC/SERVER/01 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 159: FRMCS/REC/SERVER/01 ITD

Interoperability Test Description	
Identifier	FRMCS/REC/SERVER/01
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the initiation of an emergency alert and later emergency group call during a railways emergency communications handling situation using group selection during emergency setup
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])

Interoperability Test Description			
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Areas properly configured in the participating • Dispatcher(s) implicitely affiliated		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	Mobile users move freely
	2	check	Location reports arrive at the participating
	3	stimulus	Incident happens and MCS client A sends an emergency alert to GENERIC group
	4	check	SIP MESSAGE arrives at the participating
	5	check	Participating checks cached location of the originating user to identify targeted group REC.alerted.Area1 and sends an emergency area entering alert to those members in the area indicating that associated-group-ad
	6	check	REC.Alerted.Area1 SIP MESSAGE generated by every targeted user upon reception of the SIP MESSAGE for notification of entry in an emergency alert area
	7	check	IMPLICT affiliation triggered by the participating per every user
	8	check	REC.Alerted.Area1 SIP MESSAGE forwarded by the participating arrives at the controlling
	9	check	(n) SIP MESSAGEs created by the controlling and submitted to the just-affiliated mobile users (and to the operator)
	10	check	Emergency alert arrives at all MCS Clients affiliated to the alerted group and an indication of the Emergency alert is shown to the group members
	11	stimulus	Dispatcher initiates a pre-arranged on demand group call to the alerted group by sending a SIP INVITE
	12	check	SIP INVITE forwarded by the participating arrives at the controlling
	13	check	(n) SIP INVITES forwarded to the affiliated members
	14	verify	All members receive the emergency group call and audio is exchanged
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

10.4 Initiation by a mobile user of a railways emergency communication, server driven, combined alert and voice call [FRMCS/REC/SERVER/02]

Same as in [FRMCS/REC/CLIENT/02] (or option 1 in [FRMCS/REC/SEVER/01]) but the originating combined alert+emergency call is sent to a generic group and mapped to final REC.alerted.Area1 during emergency call setup time in the participating.

Message Sequence Diagram

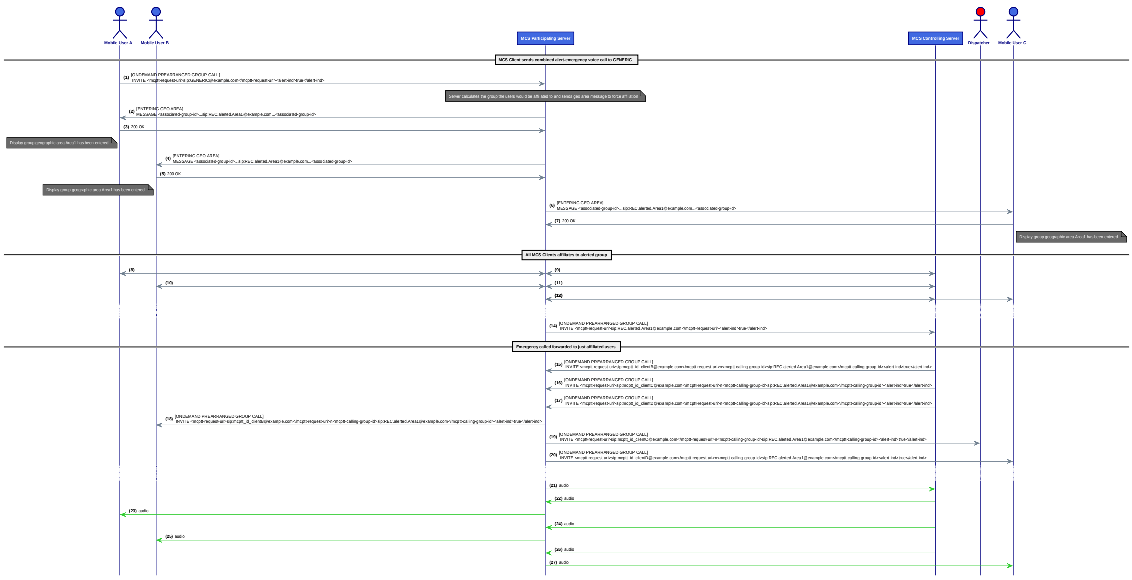

Figure 138: FRMCS/REC/SERVER/02 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 160: FRMCS/REC/SERVER/02 ITD

Interoperability Test Description	
Identifier	FRMCS/REC/SERVER/02
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling for the initiation of a combined emergency alert and group call during a railways emergency communications handling using group selection during emergency setup
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">IP connectivity among all elements of the specific scenario
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
Areas properly configured in the participating
Dispatcher(s) implicitely affiliated</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="13">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>Mobile users move freely</td></tr>
<tr><td>2</td><td>check</td><td>Location reports arrive at the participating</td></tr>
<tr><td>3</td><td>stimulus</td><td>Mobile user(s) enter alerted and affected Area1 areas</td></tr>
<tr><td>4</td><td>stimulus</td><td>Incident happens and MCS client A sends a combined emergency alert and voice call to GENERIC group</td></tr>
<tr><td>5</td><td>check</td><td>SIP INVITE arrives at the participating</td></tr>
<tr><td>6</td><td>check</td><td>Participating checks cached location, identifies REC.alerted.Area1 group as the target group and sends SIP MESSAGES to the target users to force affiliation</td></tr>
<tr><td>7</td><td>check</td><td>SIP MESSAGEs forcing affiiliation upon entering geographic area arrived at the mobile users</td></tr>
<tr><td>8</td><td>Check</td><td>Mobile users successfully affiliate to REC.alerted.Area1 group</td></tr>
<tr><td>9</td><td>check</td><td>SIP INVITE forwarded by the participating arrives at the controlling</td></tr>
<tr><td>10</td><td>check</td><td>(n) SIP INVITEs created by the controlling and submitted to the geographically-triggered-affiliated mobile users (and to the operator)</td></tr>
<tr><td>11</td><td>check</td><td>SIP INVITE arrives at all MCS Clients affiliated to the alerted group and an indication of the Emergency alert is shown to the group members</td></tr>
<tr><td>12</td><td>verify</td><td>All members receive the emergency group call with the alert indicator and audio is exchanged</td></tr>
<tr><td colspan="4">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 9.2.2.2.11 in ETSI TS 124 379 [9].</td></tr>
</table>

10.5 Dynamic MCS-native vs FRMCS triggered FAs management [FRMCS/IOP/ADVFA/01]

A MCPTT operator from vendor A defines a condition associated to the activation of a Functional Alias upon certain condition(s) is(are) met (i.e. mcptt_user_X location/speed/direction). Typically such action is defined in an OAM/dispatcher interface via a geofencing capability on top of a GIS. Possible examples for such configuration depending on whether the FRMCS logic uses client driven or third party driven procedures could be:

- MCS native FA activation based on location criteria as in TC 7.13.5. That would involve defining a FA activation criteria based on the area <LocationCriteriaForActivation> with <EnterSpecificArea> and -optionally- a <Speed> or/and a <Heading> element in the mcptt-user-profile. Such change would be notified by the CMS to the previously subscribed mcptt-client of the associated user in order to finally trigger the FA activation from that client and user.

- The FRMCS logic gets periodic/geofenced (i.e. by properly sending location reporting requests) reports from all the active MCPTT clients, checks the internally configured FA related conditions and carries out FA activation on behalf of the users.

Therefore, in both cases, upon that condition being met the "FRMCS logic" (i.e. the MCPTT client itself or the external dispatch system using either pure MCS procedures or railways "Role Management server") triggers mcptt_user_B on mcptt_client_B from vendor B (i.e. in a cabradio) to activate the FA1 functional alias.

Later, another MCPTT user (from vendor C) calls the functional alias either by using a private call or a first-to-answer call (in both cases with <call-to-functional-alias-ind> and resource list properly defined), so that the call is finally routed to the proper mcptt id (the one meeting the criteria and having successfully activated FA1).

The TC will end upon the mcppt_user_B properly taking the call.

Activity Diagram

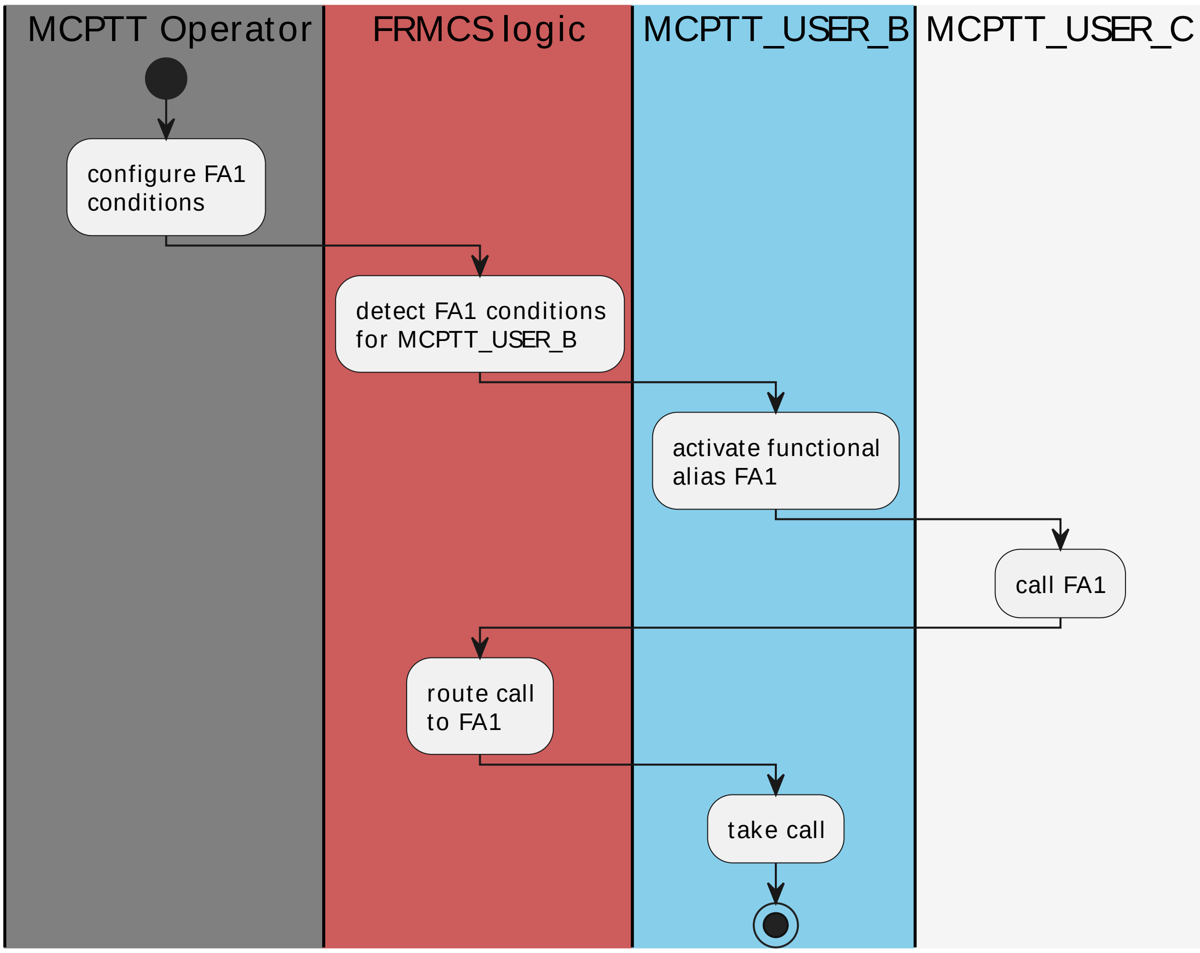

Figure 139: FRMCS/IOP/ADVFA/01 Message Sequence

10.6 Multi-train voice communication for train drivers [FRMCS/IOP/MULTI/01]

A station controller using vendor A's client sets up a multi-talker voice communication (i.e. as in TC 7.3.7) with all the drivers located on the train(s) on the same track and entitled ground users (i.e. guards) to confirm that an emergency situation is closed and normal activity can be safely restarted. How the targeted group is created or the controller chooses the destination of the call is implementation specific -using, of course, MCX building blocks- as supported by the vendor B's server side implementation and according to the specific Release under consideration in each FRMCS Plugtests.

Train driver using vendor C's client enters the track during the ongoing group call and gets connected (i.e. by a combination of TC 10.5, affiliation due to functional alias activation TC 7.7.6 and late call entry mechanism such as the one in TC 7.2.58). The communication goes on with the new participant till it is ended.

OPTIONAL: Ground user D (i.e. emergency body) managed in a different MCX server/administrative domain from vendor D is included in the operation

Activity Diagram

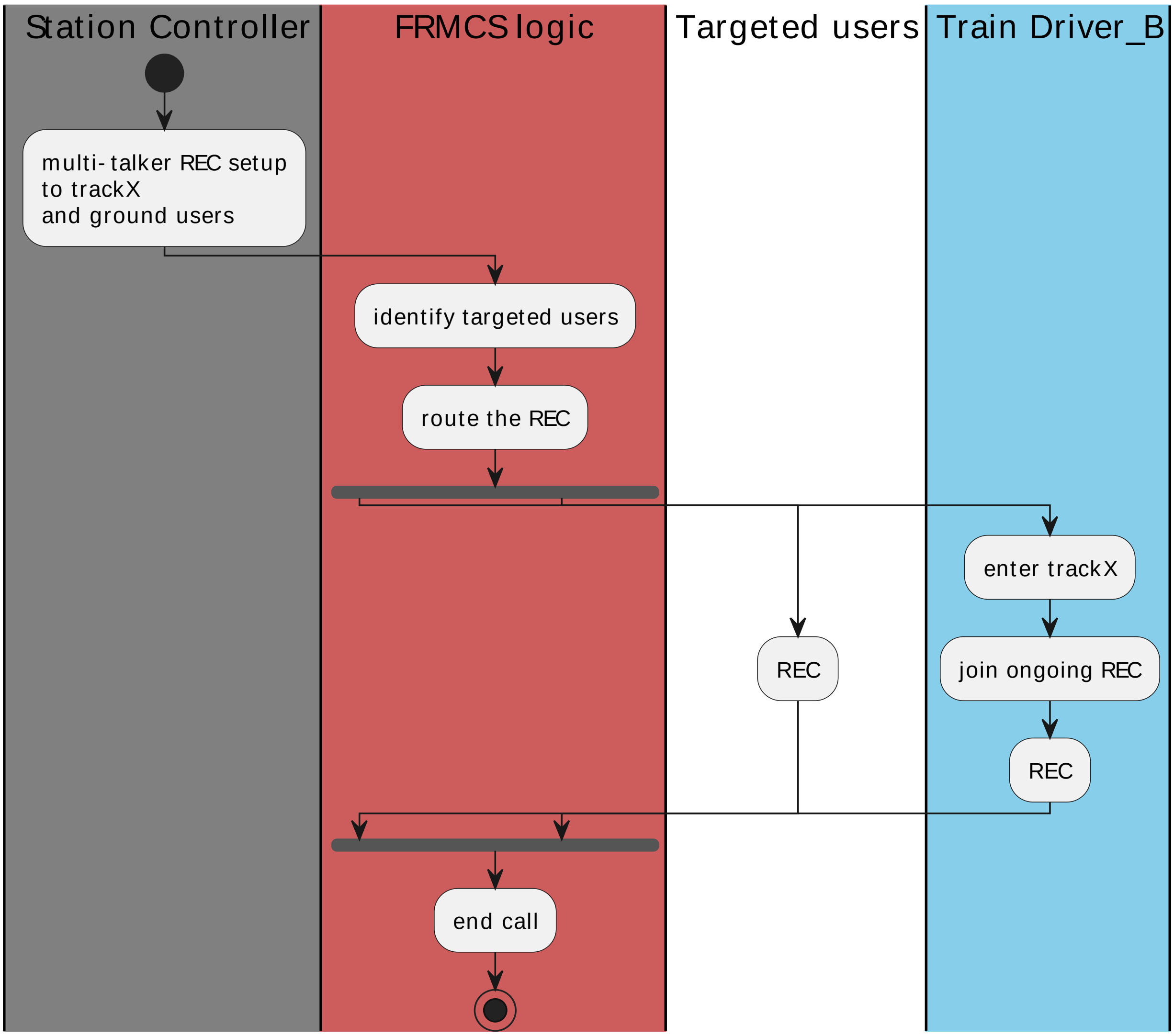

Figure 140: FRMCS/IOP/MULTI/01 Message Sequence

10.7 Accessing video footage [FRMCS/IOP/VIDEO/01]

When reaching a station due to the need to access the video footage within the train ground operator using vendor A's client/dispatcher access "train in track A" using vendor B's client video footage(s) (i.e. video pull operation).

NOTE: In case MCVideo is used (considering for example video pull 7.2.89, ambient viewing 7.2.85-88 or any other mechanism), MCVideo registration/authorization/Functional alias will need to be put in place.

Activity Diagram

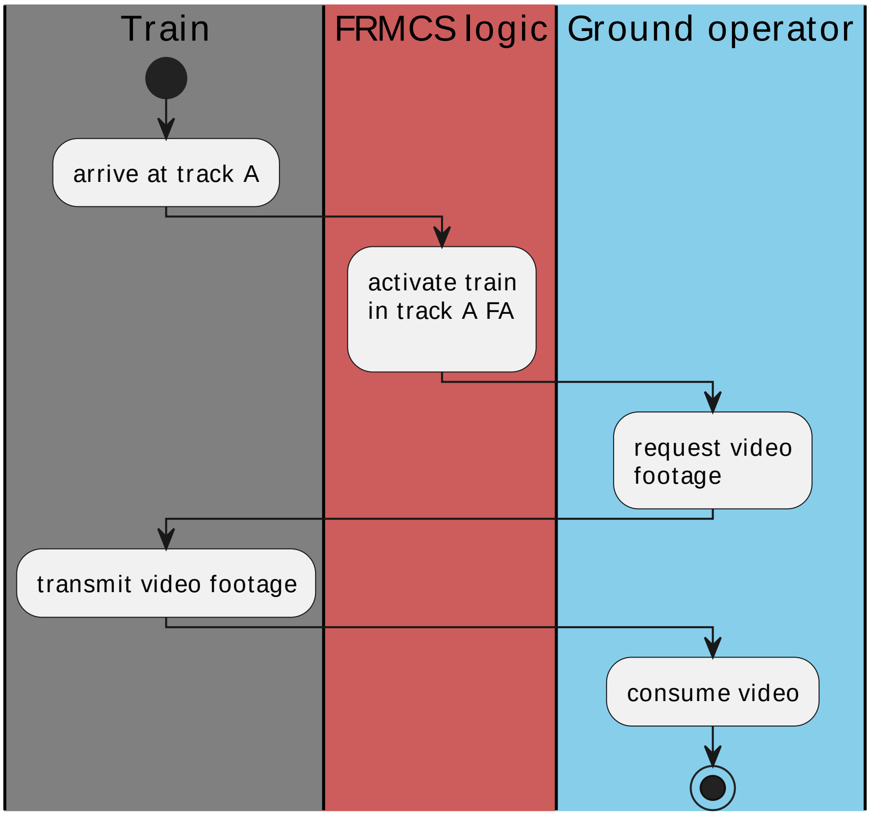

Figure 141: FRMCS/IOP/VIDEO/01 Message Sequence

10.8 Upload of files [FRMCS/IOP/FILE/01]

This is the "offline" extension of previous test case.

In order to support railway operations in those cases when there is no need for real time video while trying to minimize the load on the radio network, CCTV archives may be stored locally and later bulk transferred to the MCVideo Server/FD server of vendor B central system when approaching a station or a depot.

Therefore, train cameras or any other sources of information generate periodically videos/data files that are initially stored in the onboarded equipment. MCVideo video push or FD can later be used to put the footage upon disposal of ground operators, or any other train operations related staff. Later, those operators request to download the information using MCVideo/MCData procedures.

Activity Diagram

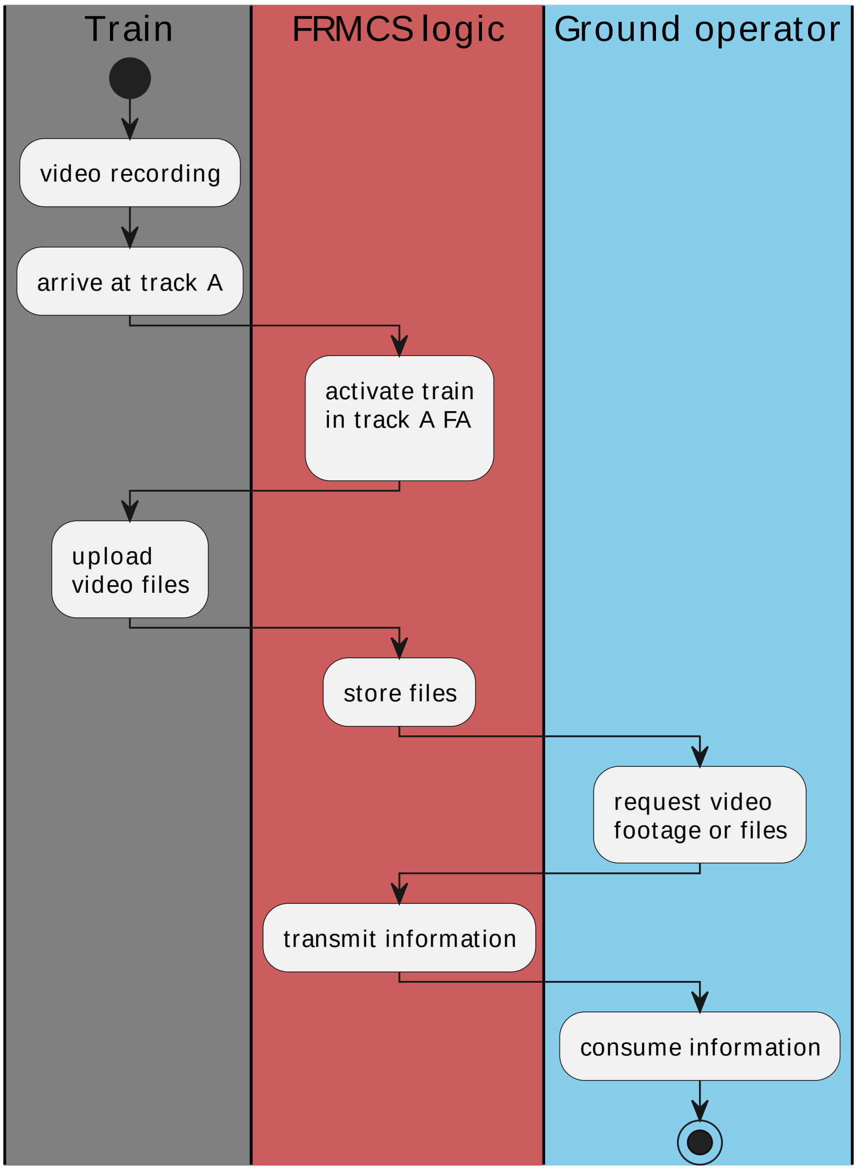

Figure 142: FRMCS/IOP/FILE/01 Message Sequence

10.9 IPCONN dual connectivity [FRMCS/IOP/IPCONN/01]

The purpose of this test case is checking multipath connectivity of a FRMCS app (both client and server side) on top of the MCS framework by using several (at least two) IPCONN over MCData connections. Therefore (at least) two 5G radio connections involving two devices/SIM cards will be used to setup parallel IPCONN connections from different vendors' MCData clients. The use cases to be demoed can be both multipath connectivity to the same endpoint (MCData server) at the same time or sequentially to different ones (i.e. to emulate border crossing scenarios when standardized MCS migration is not available).

NOTE: Unless/until an API or reference point to either trigger the setup of the IPConns or to configure them is fully standardized by ETSI/3GPP, the configuration will be agreed by consensus by the participants in the test session covering this test case.

Activity Diagram

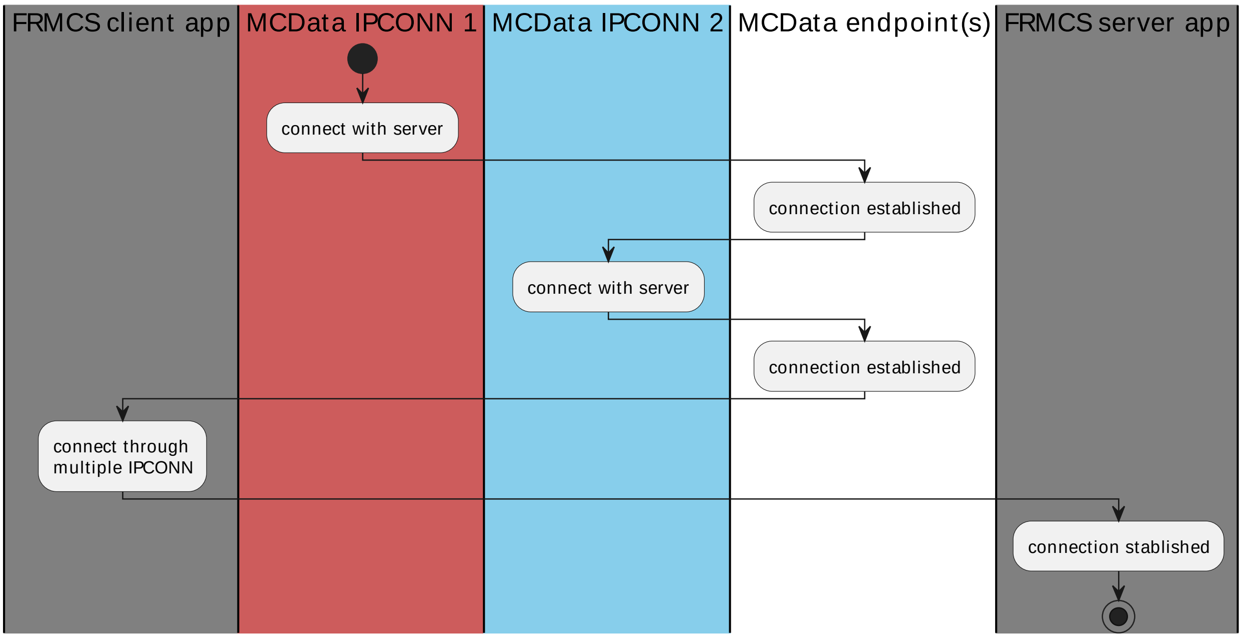

Figure 143: FRMCS/IOP/IPCONN/01 Message Sequence

10.10 IPCONN resiliency/termination upon connectivity loss [FRMCS/IOP/IPCONN/02]

The purpose of this test case is evaluating the behaviour of IPCONN sessions following either a short loss of the radio link or a longer (i.e. longer than the session-expire time).

The activity diagram depicted in figure 144 shows the first use case. How either/both MCData IPCONN end points detect the loss of connectivity and react are vendor implementation specific.

Activity Diagram

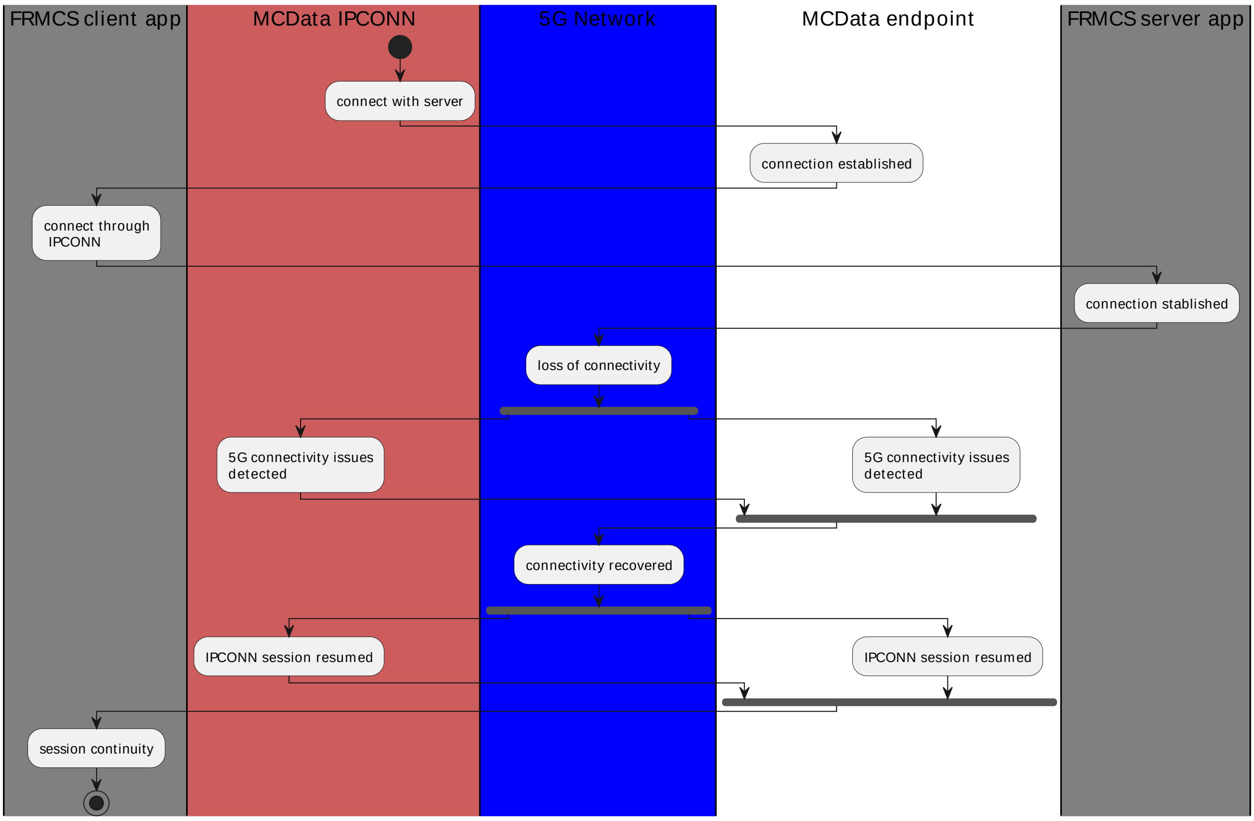

Figure 144: FRMCS/IOP/IPCONN/02 Message Sequence

10.11 REC call arbitration/pre-emption [FRMCS/IOP/REC/01]

User A initiates a MCPTT private call to the FA previously activated by User B (using vendor B's MCPTT Client). The FRMCS logic routes the call using MCS native methods to User B with the proper priority.

During the ongoing private call, User C triggers a REC in an area affecting a group that includes user A (the way the group is created and/or the call is routed to the proper callees is implementation/Release dependent).

The FRMCS logic (i.e. the client due to automated call handling or the controlling server being a signalling anchor) detects the new call is of higher priority and drops initial lower priority one, routing the call properly to user A. Initial private call is dropped, User A receives a visual & audio notification of the REC and takes the call.

Activity Diagram

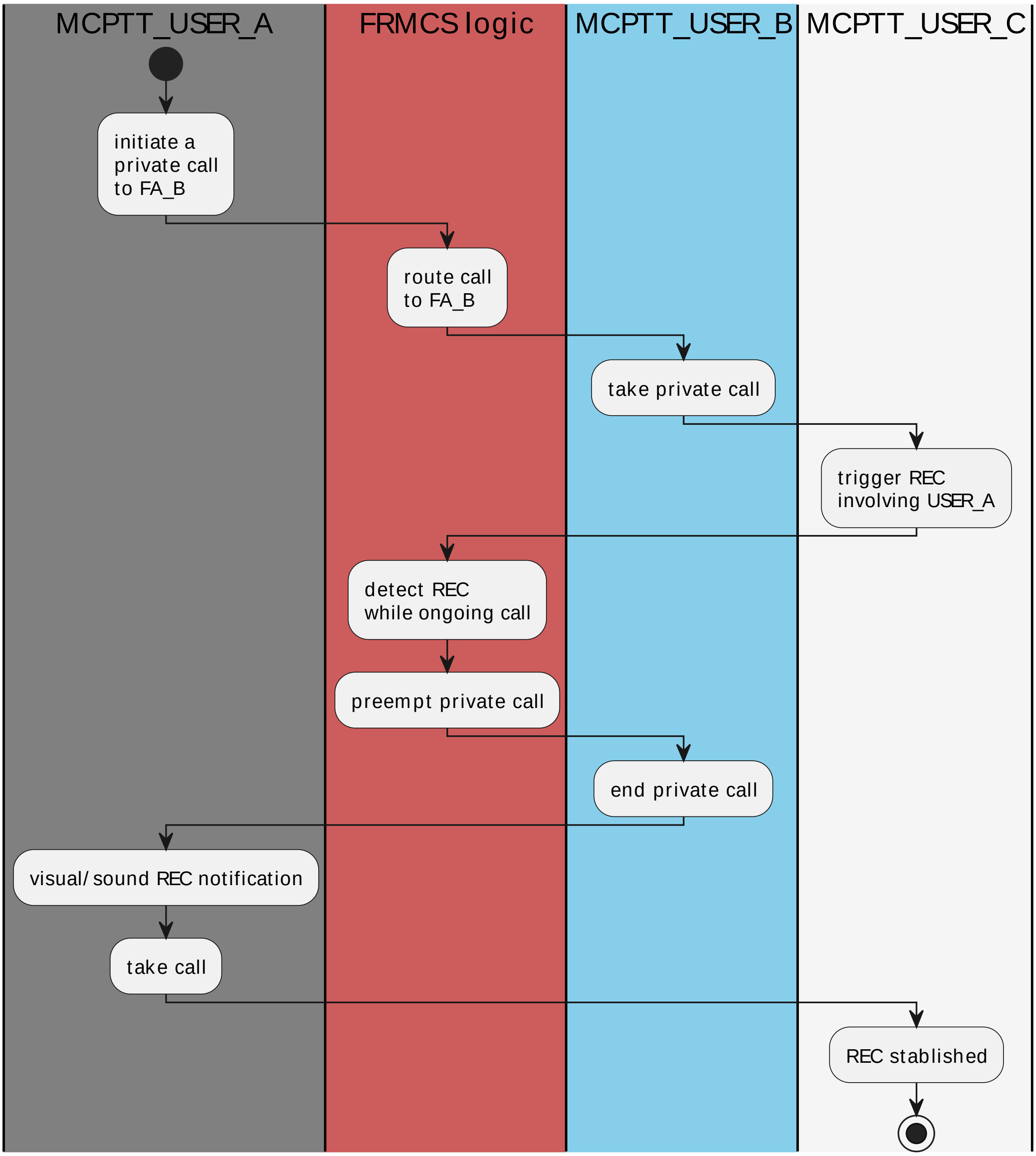

Figure 145: FRMCS/IOP/REC/01 Message Sequence

10.12 Multiservice MCPTT/MCData [FRMCS/IOP/MMCS/01]

This test case aims at evaluating the capability to simultaneously support two MCS based FRMCS communications (i.e. MCPTT and MCData) over a 5G network while fulfilling end to end requirements associated to the different 5G bearers (with corresponding 5G Qi-s).

In order to do so, the test case involves a User A (i.e. in a cab radio) previously properly registered to MCS services and activated the functional alias FA1.

User A (i.e. a Train Driver) initiates a private MCPTT call to another FA activated by User B (using a MCS client from vendor B).

Meanwhile a MCData transmission (i.e. IPCONN with a FRMCS up on top) is triggered at the same time by a FRMCS client app by triggering the IPCONN connection towards another MCData endpoint.

Both communications and MC 5G flows (and therefore associated KPIs) are properly stablished.

Activity Diagram

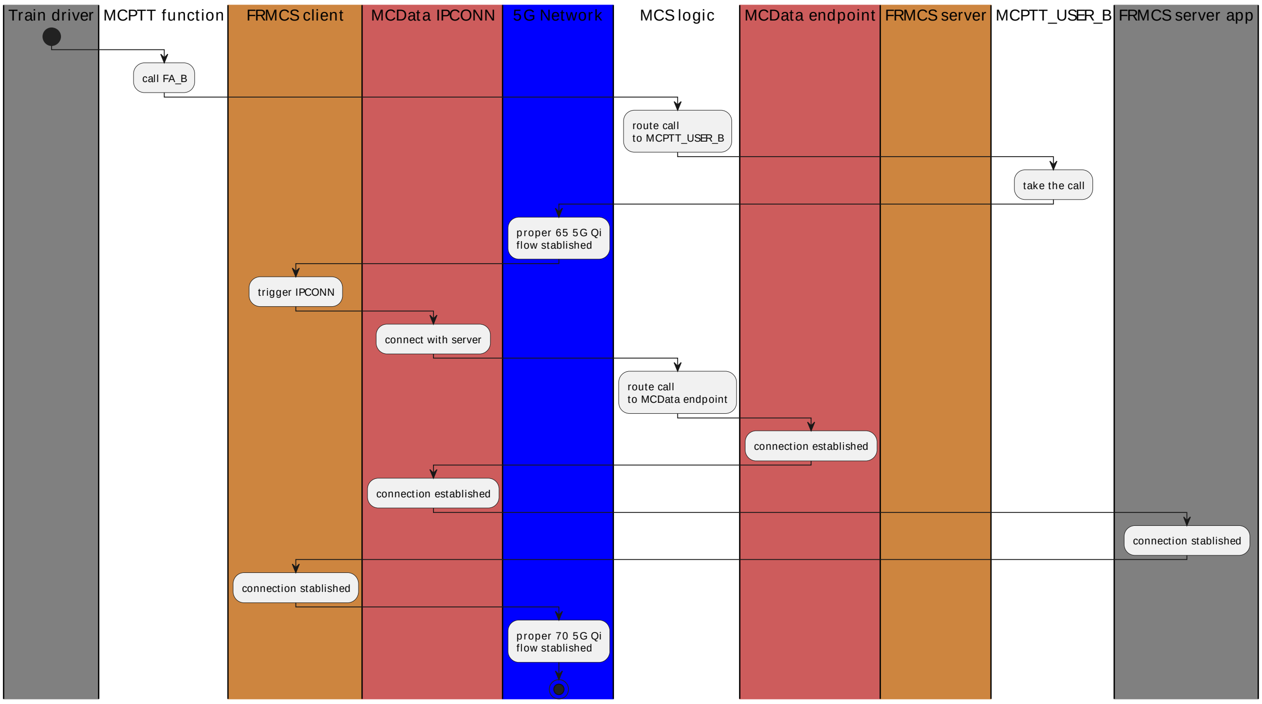

Figure 146: FRMCS/IOP/MMCS/01 Message Sequence

11 Interworking Function (IWF)

11.1 Common remarks

Due to the different reference points, status of the normative work and protocols on the LMR side of the Inter Working Function the test cases considered in the Plugtests will be defined as "LMR-agnostic". That means that only the behaviour of the MCS side of the IWF will be evaluated in the different directions (originating and terminating) and roles (participating or controlling). Therefore the LMR-specific signalling will not be evaluated and the completion of any test cases will involve checking that the operation terminating at or initiated on the LMR side was succesfull.

11.2 Affiliation

11.2.0 Introduction

According to clause 9.1 in ETSI TS 129 379 [48] affiliation in IWF covers two different situations: a) explicit and implicit affiliation of a user homed in the IWF at the IWF homing the user (including theoretically even the case where the IWF manages affiliation to a group on behalf of the users homed in that by having only one affiliation for a whole set of users homed in the IWF) and b) explicit and implicit affiliation of an MCPTT user at the IWF owning the MCPTT group.

11.2.1 Affiliation status determination from MCPTT server owning the MCPTT group(s) [IWF/MCPTT/AFFIL/DET/01]

For the affiliation determination procedure the IWF is considered to behave as a participating MCPTT server by keeping an internal list of information entries associated to the affiliation of every user homed in the IWF equivalent to that defined in ETSI TS 124 379 [9] clause 9.2.2.2.2. In order to create and update that list the LMR system via the IWF function will subscribe to the affiliation of every user by following clause 9.2.1.2.7 in ETSI TS 129 379 [48].

Therefore, to discover whether a user homed in the IWF was successfully affiliated to a group in the MCPTT server owning it (i.e. immediately after triggering an affiliation to that group), the IWF shall generate an initial SIP SUBSCRIBE request according to ETSI TS 124 229 [6], IETF RFC 3856 [26] and IETF RFC 6665 [34].

In every per-group SIP SUBSCRIBE request, the IWF shall set the Request-URI to the public service identity of the controlling MCPTT function associated with the handled MCPTT group ID and include an application/vnd.3gpp.mcptt-info+xml MIME body with a <mcptt-request-uri> element set to the handled MCPTT group ID and <mcptt-calling-user-id> element set to the MCPTT ID associated with the user homed in the IWF. The Expires header is set to its maximum value.

The subscription is forwarded to the MCPTT Controlling server that will build and send back a SIP NOTIFY request containing an application/pidf+xml MIME body indicating per-group affiliation information constructed according to ETSI TS 124 379 [9], clause 9.3.1 with or without an <affiliation> element.

In this test case the IWF, for an internal MCPTT group information entry with the previous affiliation status "affiliating", when receiving the NOTIFY and for the homed MCPTT ID and MCPTT client ID such that the application/pidf+xml MIME body contains an <affiliation> child element of the <status> element of the <tuple> element and the "expires" attribute of the <affiliation> element indicating expiration of affiliation, shall set the affiliation status of the MCPTT group information entry to "affiliated"; and shall set the next publishing time of the MCPTT group information entry to the current time and half of the time between the current time and the expiration of affiliation.

Message Sequence Diagram

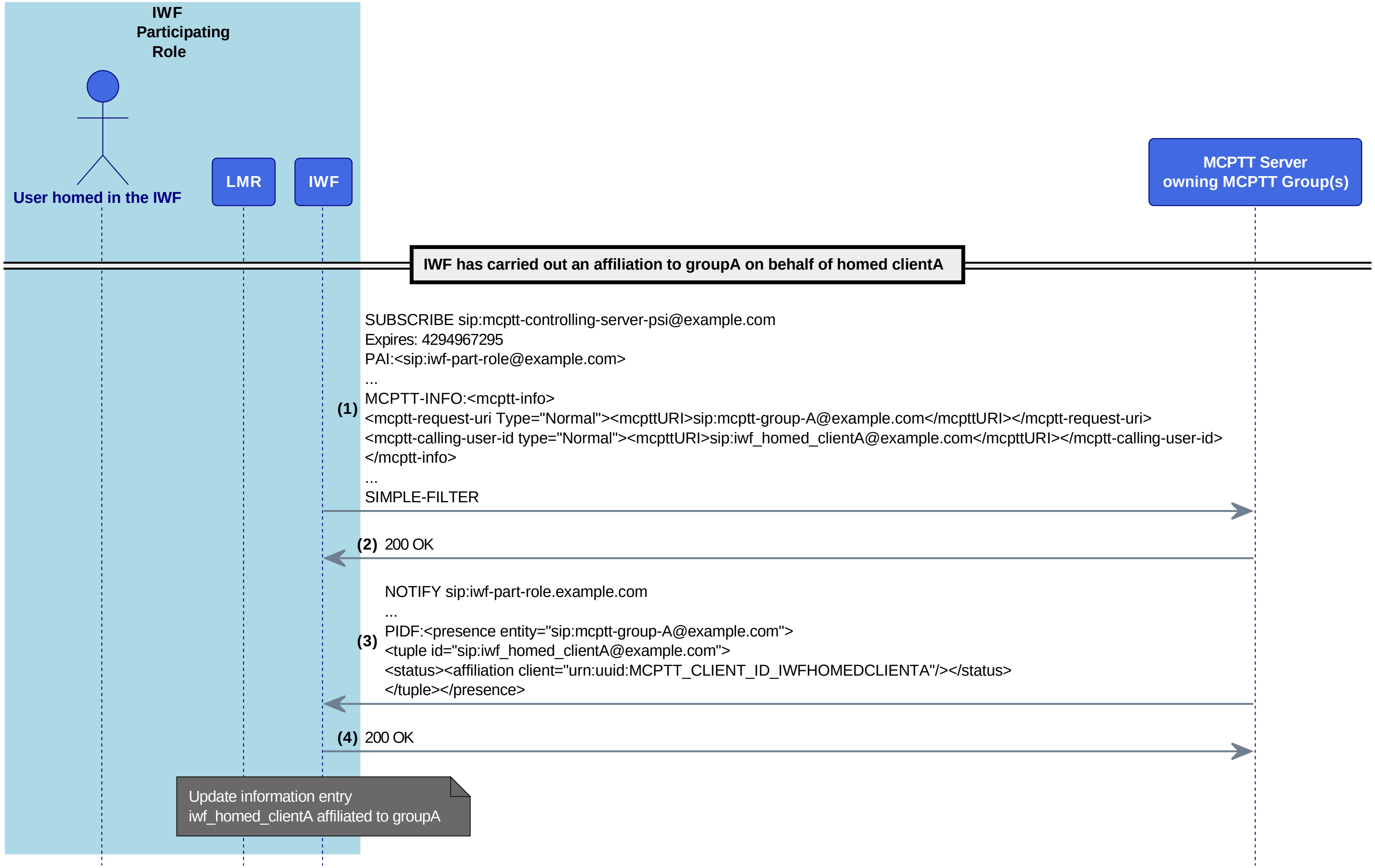

Figure 147: IWF/MCPTT/AFFIL/DET/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 161: IWF/MCPTT/AFFIL/DET/01

Interoperability Test Description			
Identifier	IWF/MCPTT/AFFIL/DET/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, and affiliation status properly notified upon subscription		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	IWF sends an affiliation subscription (SIP SUBSCRIBE) request to the MCPTT controlling for the homed user (iwf_homed_clientA@example.com)
	2	check	The MCPTT controlling server sends a NOTIFY related to the subscription to the IWF
	3	verify	Affiliation information is correctly updated in the IWF

11.2.2 Sending affiliation status change towards MCPTT server owning MCPTT group procedure [IWF/MCPTT/AFFIL/CHANGE/01]

According to clause 9.2.1.2.6 in ETSI TS 129 379 [48] the affiliation status change can be triggered by three different situations (i.e. affiliation, de-affiliation and refresh). In this test case the first situation is considered: sending an affiliation request of a user homed in the IWF to a handled MCPTT group ID.

In order to do so, the IWF will create a SIP PUBLISH request with a Request-URI set to the public service identity of the controlling MCPTT function associated with the handled MCPTT group ID and include an application/vnd.3gpp.mcptt-info+xml MIME body. In the application/vnd.3gpp.mcptt-info+xml MIME body the <mcptt-request-uri> element will be set to the handled MCPTT group ID, the <mcptt-calling-user-id> element will be set to MCPTT ID associated with the user homed in the IWF, Expires header field according to IETF RFC 3903 [27] will be to 4294967295 and information of the groups according to the following mechanism:

Build an application/pidf+xml MIME body indicating complete per-group affiliation by indicating all MCPTT client IDs associated with the user homed in the IWF such that the affiliation status is set to "affiliating" or "affiliated" and the expiration time has not expired yet. The IWF shall set the <p-id> child element of the <presence> root element to the current p-id and shall not include the "expires" attribute in the <affiliation> element.

Message Sequence Diagram

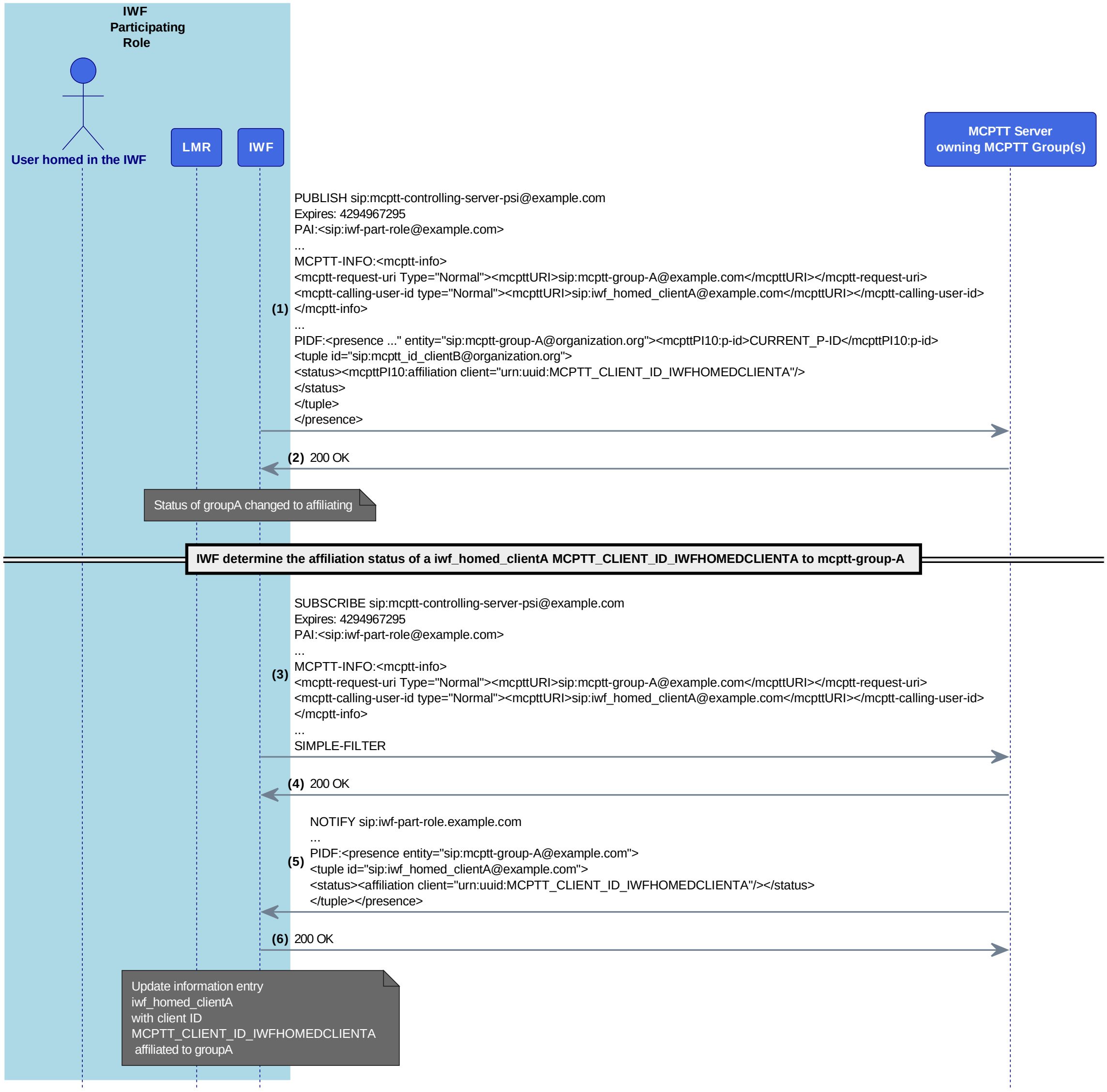

Figure 148: IWF/MCPTT/AFFIL/CHANGE/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 162: IWF/MCPTT/AFFIL/CHANGE/01

Interoperability Test Description			
Identifier	IWF/MCPTT/AFFIL/DET/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, and affiliation status properly changed		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	IWF sends a change in the affiliation status (SIP PUBLISH) request to the MCPTT controlling server to affiliate the homed user (iwf_homed_clientA@example.com) to the group groupA
	2	check	The MCPTT controlling server sends a NOTIFY related to the subscription to the IWF
	4	verify	Affiliation information is correctly updated in the IWF

11.2.3 Receiving subscription to affiliation status of users by the IWF in terminating participating role [IWF/MCPTT/AFFIL/DET/02]

Following clauses 9.2.1.3 and 9.2.2.2.4 in ETSI TS 124 379 [9] a user will start a subscription to the affiliation status of a user owned by the IWF by sending a SIP SUBSCRIBE to the MCPTT server serving him/her that will be accepted. The serving MCPTT server will then create a subscription and send it to the IWF in a terminating participating role.

According to clause 9.2.1.2.7 in ETSI TS 129 379 [48], an IWF performing such terminating participating role and supporting subscription to the affiliation status of one of its users would receive a SIP SUBSCRIBE with a Request-URI set to the public service identity identifying the IWF performing the terminating participating role serving the user homed in the IW and an application/vnd.3gpp.mcptt-info+xml MIME body containing the<mcptt-request-uri> element which identifies an MCPTT ID associated with a user homed in that IWF. Then the IWF will identify both the served MCPTT ID in the <mcptt-request-uri> element of the application/vnd.3gpp.mcpttinfo and the originating MCPTT ID in the <mcptt-calling-user-id> element of the application/vnd.3gpp.mcptt-info+xml MIME body of the SIP SUBSCRIBE request.

If the originating MCPTT ID is authorized to subscribe to the affiliation status of the user homed in the IWF it shall generate a 200 (OK) response to the SIP SUBSCRIBE request according to ETSI TS 124 229 [6] and IETF RFC 6665 [34].

For the duration of the subscription, the IWF performing the terminating participating role shall notify the subscriber about changes of the information of the served MCPTT ID, as described in clause 9.2.1.2.5 in ETSI TS 129 379 [48].

Message Sequence Diagram

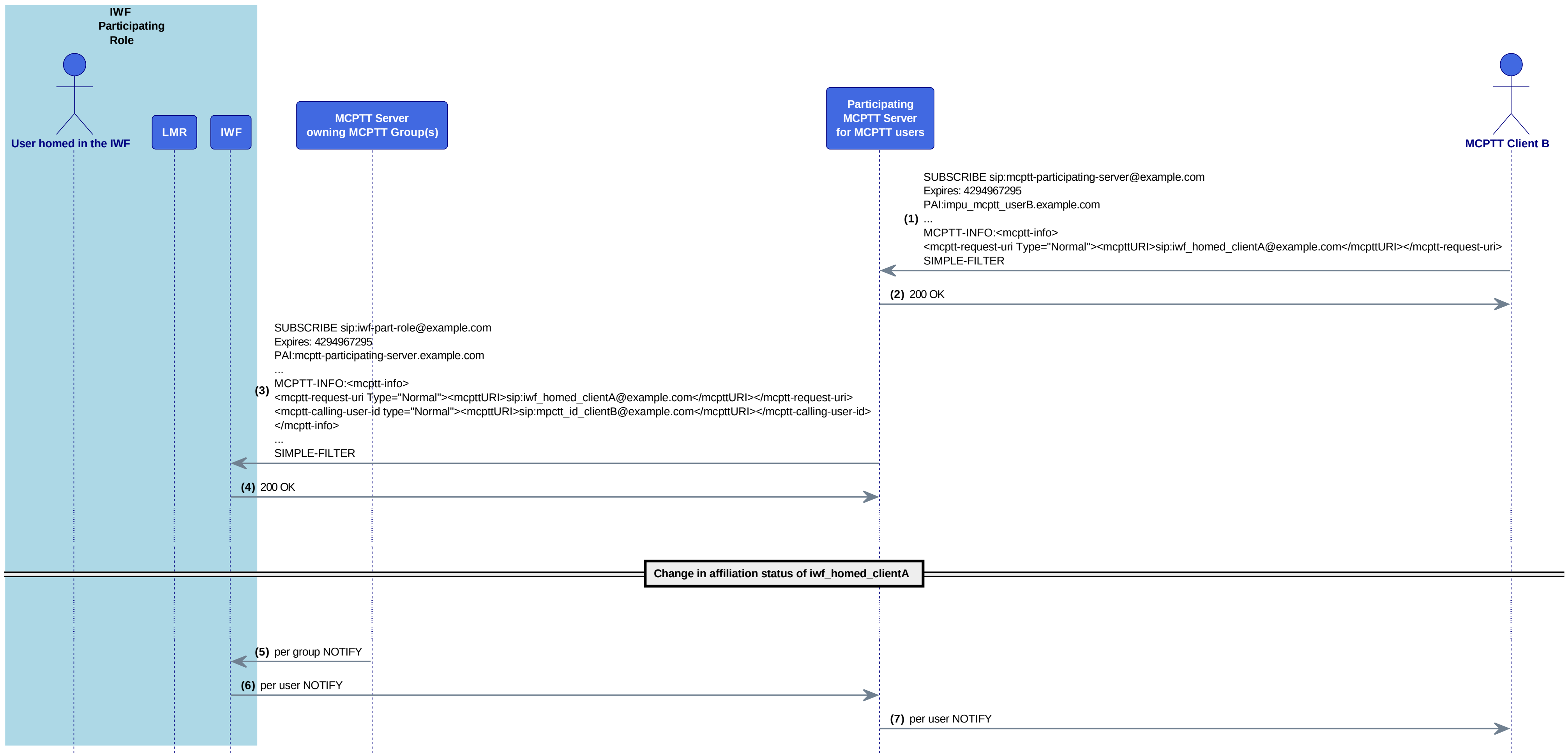

Figure 149: IWF/MCPTT/AFFIL/DET/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 163: IWF/MCPTT/AFFIL/DET/02

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">IWF/MCPTT/AFFIL/DET/02</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, and affiliation status properly forwarded to the requesting user</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• IWF-MCPTT_AFFIL (+AFFIL in the MCPTT side)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode
• LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively
• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="5">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>MCPTT user (mcptt_id_clientB@example.com) sends an affiliation subscription (SIP SUBSCRIBE) to the MCPTT (participating) server serving him/her</td></tr>
<tr><td>2</td><td>check</td><td>The MCPTT server accepts and sends another subscription with the <mcptt-calling-user-id> element fulfilled to the IWF in terminating participating role</td></tr>
<tr><td>3</td><td>check</td><td>IWF in terminating participating role checks the permissions of the requesting user and sends a 200 OK</td></tr>
<tr><td>4</td><td>verify</td><td>Affiliation information properly notified from the IWF to the requesting user upon any change</td></tr>
</table>

11.2.4 Sending notification of affiliation changes of users by the IWF in terminating participating role [IWF/MCPTT/AFFIL/CHANGE/02]

According to clause 9.2.1.2.5 in ETSI TS 129 379 [48] an IWF, in order to notify the subscriber about changes of a user homed in that IWF whose affiliation status has been subscribed shall generate upon every MCPTT client ID stored in the information entry list an application/pidf+xml MIME body indicating per-user affiliation information according to ETSI TS 124 379 [9], clause 9.3.1.

NOTE: The procedure associated to this test case is used by others (i.e. [IWF/MCPTT/AFFIL/DET/02]).

Message Sequence Diagram

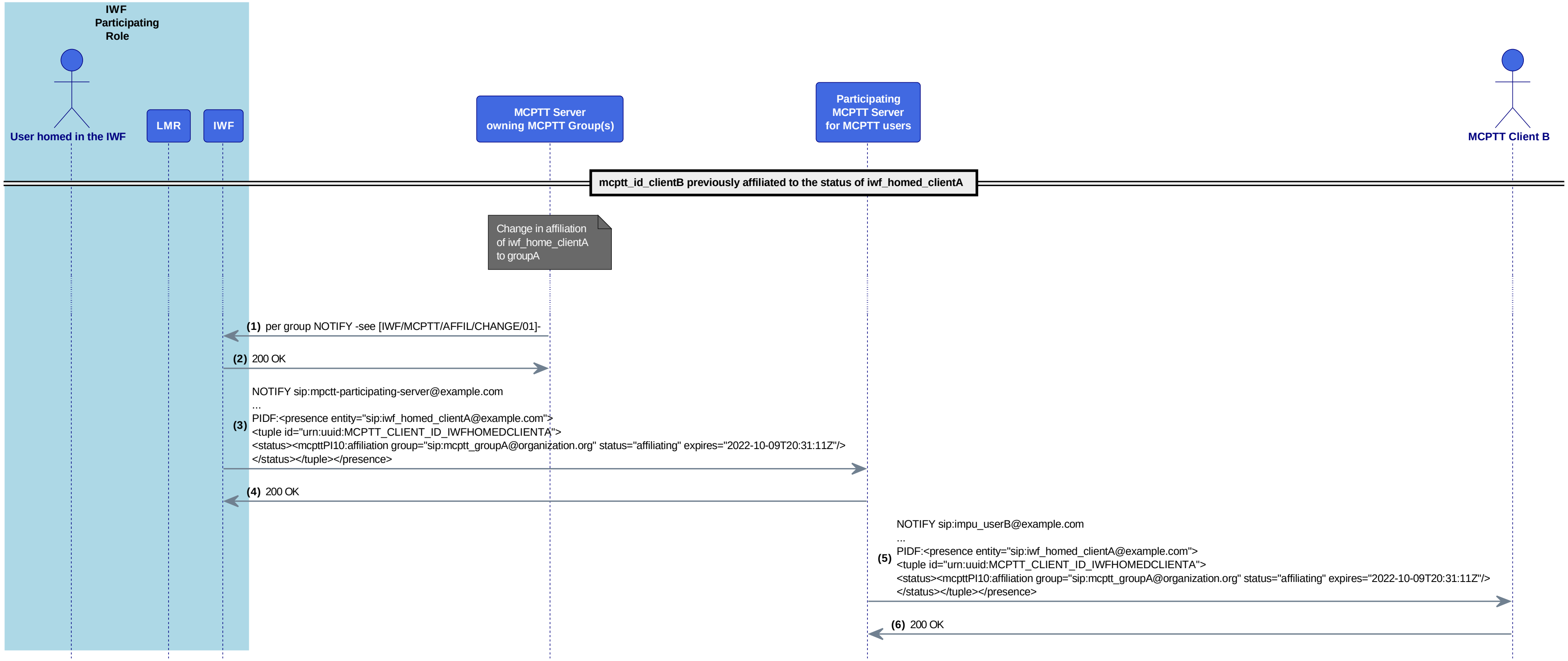

Figure 150: IWF/MCPTT/AFFIL/CHANGE/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 164: IWF/MCPTT/AFFIL/CHANGE/02

Interoperability Test Description			
Identifier	IWF/MCPTT/AFFIL/CHANGE/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, and affiliation status change properly notified		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL (+AFFIL in the MCPTT side)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	The controlling owning mcptt_groupA sends a NOTIFY to the IWF in the participating role to update the status of affiliation of iwf_homed_clientA
	2	check	The IWF in participating role updates the information entry list and generates a per-user affiliation presence PIDF inside a NOTIFY to be sent to the participating serving the subscribed-to-the-homed-user-affiliation status user (mcptt_id_clientB)
	3	check	Participating serving mcptt_id_clientB forwards the NOTIFY to the clientB
	4	verify	Affiliation information properly notified from the IWF to the requesting user upon any change

11.2.5 Remarks regarding procedures of IWF owning the MCPTT group [IWF/MCPTT/AFFIL/IWFOWNED/***/01]

When IWF is in controlling role, that is, owning one/several MCPTT groups, it needs to answer to (de)affiliation and subscription requests by MCPTT clients.

Since such behaviour is actually defined by the ETSI TS 124 379 [9] and included in the clause 7.7 AFFILIATION of the present document no new test cases will be re-described in the IWF section. Plugtests participants can therefore use [AFFIL/*/] test cases to evaluate it with other participating or MCS clients providers.

11.3 MCPTT Calls

11.3.0 Introduction

Following the approach described in clause 11.1, in this clause the behaviour in IWF-1 interface of a LMR-agnostic InterWorking Function will be evaluated for MCPTT calls. Therefore the successful verification of every step in the LMR side will need to be assessed by "visual inspection" (i.e. call correctly arriving at the terminating side, correct media flow, etc.).

11.3.1 IWF in participating role originates an on-demand prearranged MCPTT group call on behalf of an LMR user [IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/01]

This test comprises the establishment of an on-demand prearranged Group Call initiated from a LMR user when the IWF plays the participating role. As stated in the Common Remarks section, the LMR signalling in the originating side will not be evaluated since it is LMR-dependent.

Therefore, upon the LMR user triggering a group call, the resulting IWF's SIP signalling will be evaluated. Similarly to [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/01] no floor control -NFC- mechanisms will be specifically considered apart from the simplest case for verifying e2e communications.

NOTE: The MCPTT ID associated to the calling LMR user is considered to be previously affiliated to the target MCPTT group owned by the MCPTT controlling server. Similarly, unless specified, no emergency or imminent peril conditions will be considered.

As stated in clause 10.1.3.1.1 in ETSI TS 129 379 [48] to establish an MCPTT prearranged group session, the IWF performing the participating role shall generate an initial SIP INVITE as specified in clause 10.1.2.1 and modify it according to clause 6.6.2.1.2. That then means that the IWF will generate a SIP INVITE with an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcpttinfo> element containing the <mcptt-Params> element with the <session-type> element set to a value of "prearranged", the <mcptt-request-uri> element set to the group identity, the <mcptt-calling-user-id> to the MCPTT ID of the calling user and, finally, the <mcptt-client-id> element set to a value determined by the IWF.

NOTE: If the group identity can be determined to be a TGI and if the IWF performing the participating role can associate the TGI with a MCPTT group ID, the <associated-group-id> element would be set to the MCPTT group ID. In this test case this would not be the case, a regular group (no temporary group/group regrouping) will be considered.

On receiving the SIP 2xx response to the SIP INVITE request, the IWF performing the participating role shall interact with the user plane as specified in ETSI TS 129 380 [49] and may subscribe to the conference event package (not depicted in the diagram).

Message Sequence Diagram

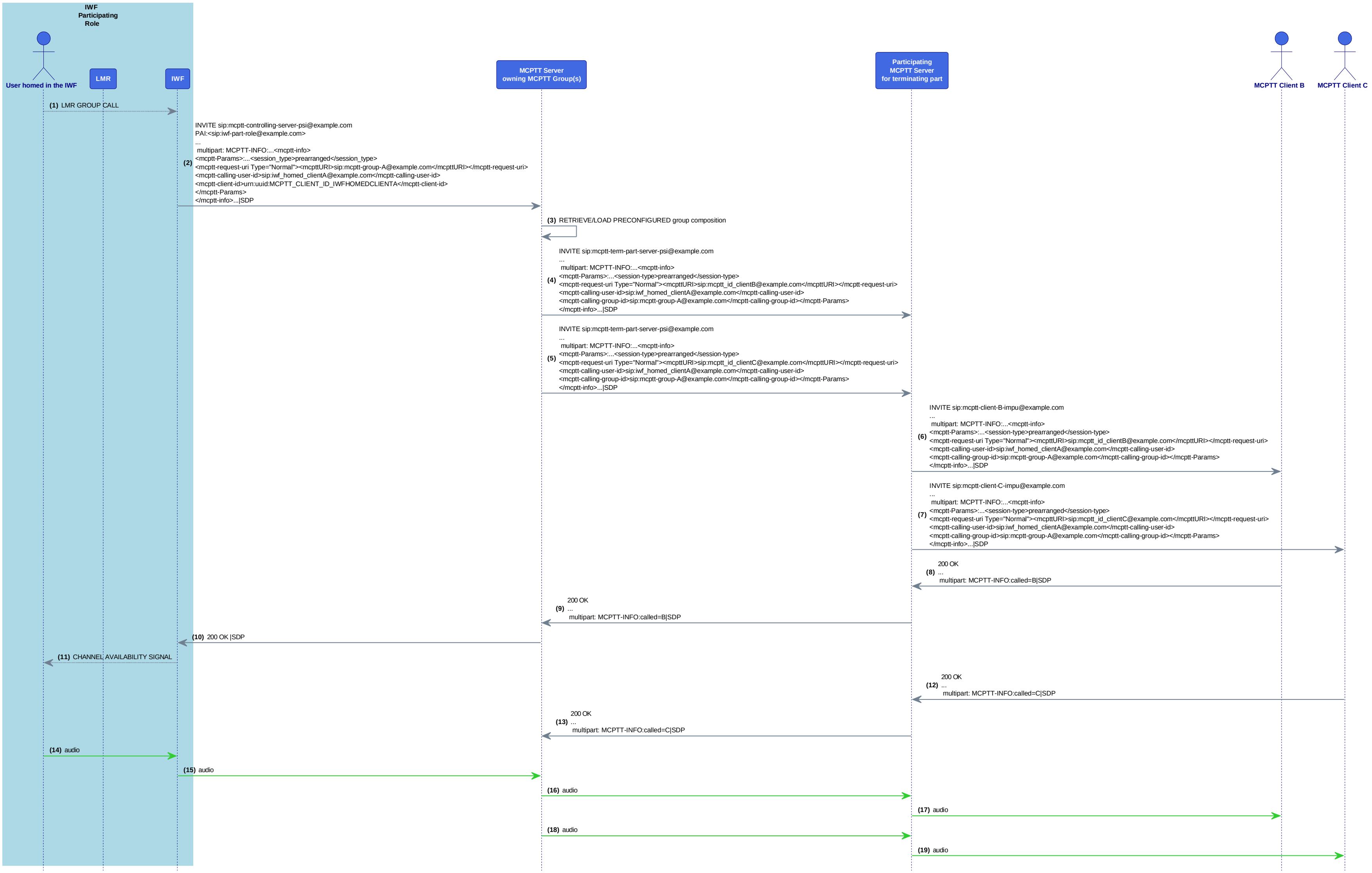

Figure 151: IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 165: IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/01

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, and prearrange group call properly stablished		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_PART • IWF-MCPTT-Part_ONN-MCPTT-CALL • IWF-MCPTT-Part_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	LMR user (user homed at the IWF in participating role) will initiate a group call mapped to mcptt_groupA
	2	check	Resulting INVITE is sent to the PSI of the controlling server owning the MCPTT group
	3	check	The controlling server retrieves the list of group members and sends "n" INVITES to the terminating participating server(s) serving the group members
	4	check	"n" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	5	check	"n" INVITEs received at the affiliated mcptt_id_clientX
	6	check	"n" SIP dialogs established
	7	verify	Call connected and multiple media flows exchanged from the LMR user to those in the MCPTT side
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.2 IWF in participating role initiates an on-demand chat MCPTT group call on behalf of an LMR user [IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/01]

This test comprises the establishment of an on-demand chat Group Call initiated from a LMR user when the IWF plays the participating role.

As stated in clause 10.2.2.1.1 in ETSI TS 129 379 [48] the IWF originates a chat group session on behalf of a user homed in the IWF by generating an initial SIP INVITE as specified in clause 10.2.2.1 and modify it according to clause 6.6.2.1.2. That then means that the IWF will generate a SIP INVITE with an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcpttinfo> element containing the <mcptt-Params> element with the <session-type> element set to a value of "chat", the <mcptt-request-uri> element set to the group identity, the <mcptt-calling-user-id> to the MCPTT ID of the calling user and, finally, the <mcptt-client-id> element set to a value determined by the IWF.

On receiving the SIP 2xx response to the SIP INVITE request, the IWF performing the participating role shall interact with the user plane as specified in ETSI TS 129 380 [49] and may subscribe to the conference event package (not depicted in the diagram).

Message Sequence Diagram

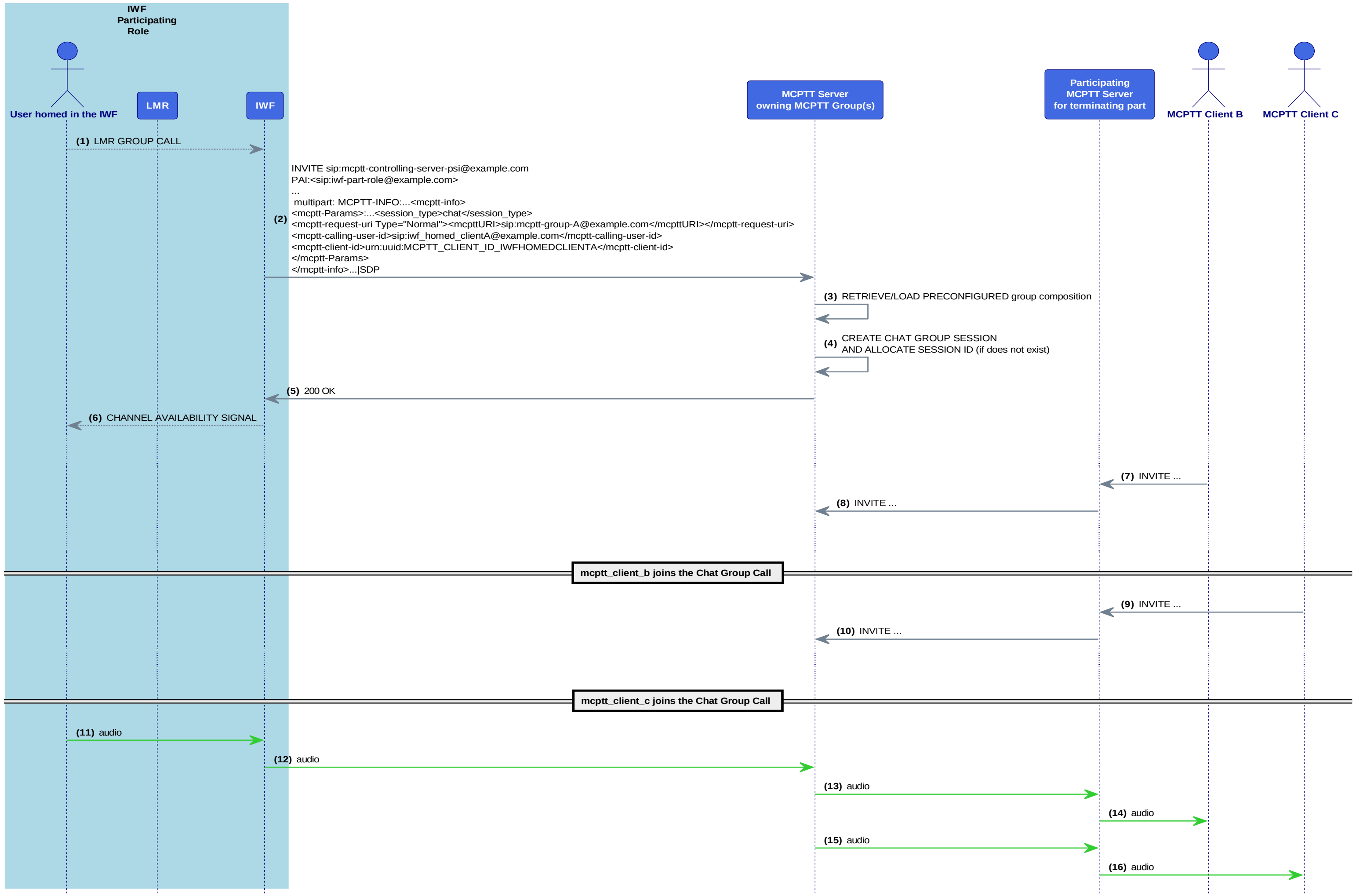

Figure 152: IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 166: IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/01

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, and chat group call properly stablished		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_PART • IWF-MCPTT-Part_ONN-MCPTT-CALL • IWF-MCPTT-Part_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	LMR user (user homed at the IWF in participating role) will initiate a group call mapped to mcptt_groupA for a group call
	2	check	Resulting INVITE is sent to the PSI of the controlling server owning the MCPTT group
	3	check	The controlling server retrieves the list of group members, allocates the session ID and sends a 200 OK back
	4	check	Any other group member sends an INVITE to join the ongoing chat group call
	5	check	"n" INVITEs received at the controlling server owning the MCPTT group
	6	check	"n" SIP dialogs established
	7	verify	Call connected and multiple media flows exchanged from the LMR user to those in the MCPTT side
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.3 IWF in participating role joins an ongoing on-demand chat MCPTT group call on behalf of an LMR user [IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/02]

This test is equivalent to [IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/01] but the chat MCPTT group call has been already initiated. Therefore, the session ID has been already allocated and any MCPTT client subscribed to the conference event will further receive a SIP NOTIFY with the information of the new participant (iwf_homed_clientA).

If the new INVITE has no emergency-ind, imminentperil-ind or alert-ind changing the status of the ongoing call in terms of signalling the sequence diagram will be equivalente in the IWF interface as that on [IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/01].

Message Sequence Diagram

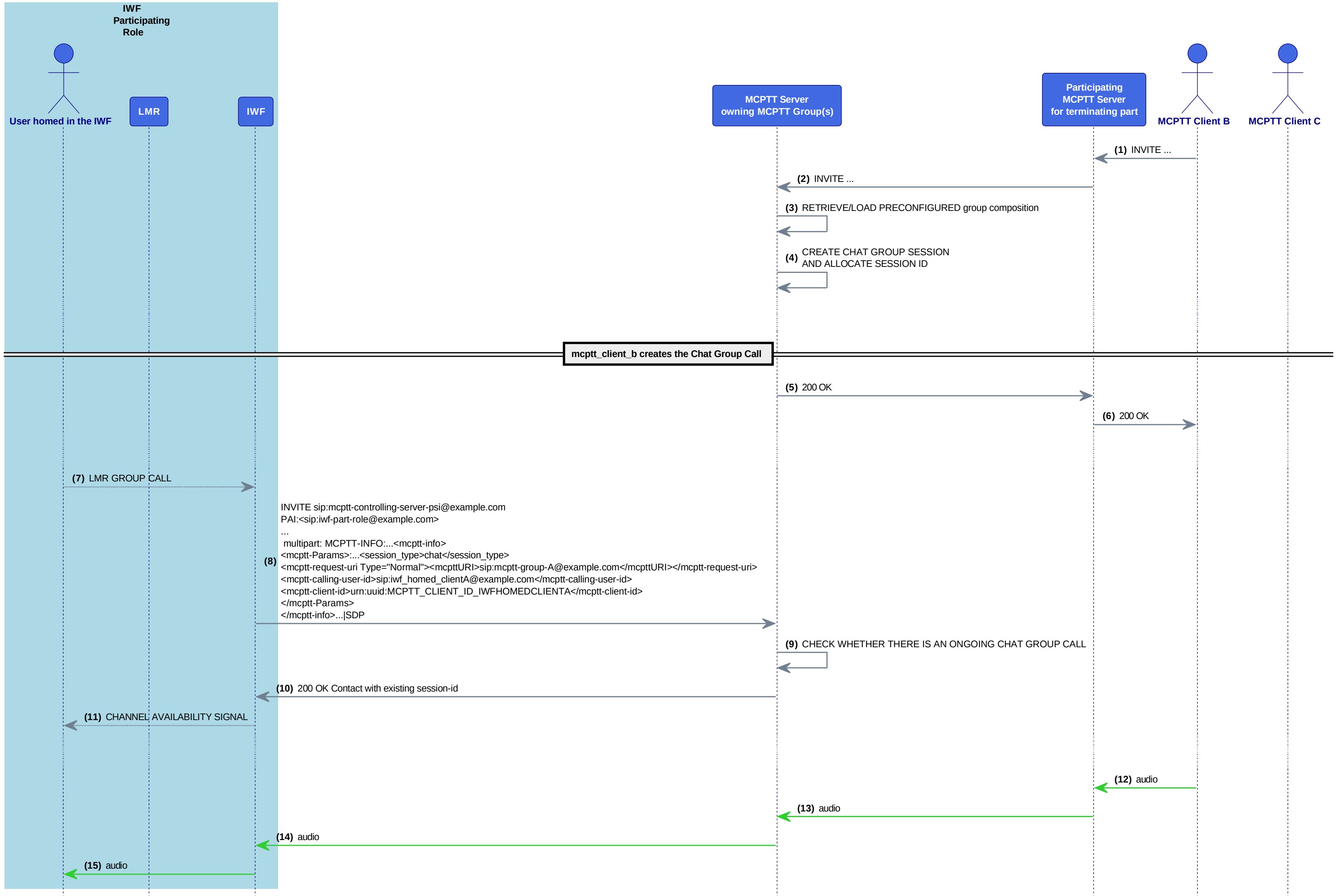

Figure 153: IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 167: IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/02

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, and chat group call properly stablished		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_PART • IWF-MCPTT-Part_ONN-MCPTT-CALL • IWF-MCPTT-Part_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT user intiates a chat group call to mcptt_groupA
	2	check	Resulting INVITE is sent to the PSI of the participating serving the MCPTT user and later forwarded to the controlling owning the group
	3	check	The controlling server retrieves the list of group members, allocates the session ID and sends a 200 OK back
	4	check	Any other group member sends an INVITE to join the ongoing chat group call
	5	check	"n" INVITEs received at the controlling server owning the MCPTT group
	6	check	"n" SIP dialogs established
	7	verify	Call connected and multiple media flows exchanged from the LMR user to those in the MCPTT side
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.4 IWF performing the terminating participating procedures receives an on-demand prearranged MCPTT group call targeting a user homed in the IWF [IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/02]

In this case the on-demand prearranged MCPTT group call is initiated by an MCPTT client. Therefore, the MCPTT controlling server, following clause 10.1.1.4.2 in ETSI TS 124 379 [9], once it checks that the group identity in the <mcptt-request-uri> in the mcptt-info included in the original INVITE is associated with a group document maintained by the GMS, shall retrieve the necessary group document(s) from the group management server for that group identity and create the associated INVITES for the mcptt-ids currently affiliated to the group and forward them to the corresponding terminating participating MCPTT servers.

For a user homed in the IWF acting as participating role (therefore terminating participating) that will mean, upon receiving a SIP INVITE request for terminating participating MCPTT function, the IWF, following clause 10.1.3.2 in ETSI TS 129 379 [48], will actually perform the steps in clause 10.1.2.2. That clause makes a distinction between manual and automatic commencement mode (in this diagram auto is considered).

Message Sequence Diagram

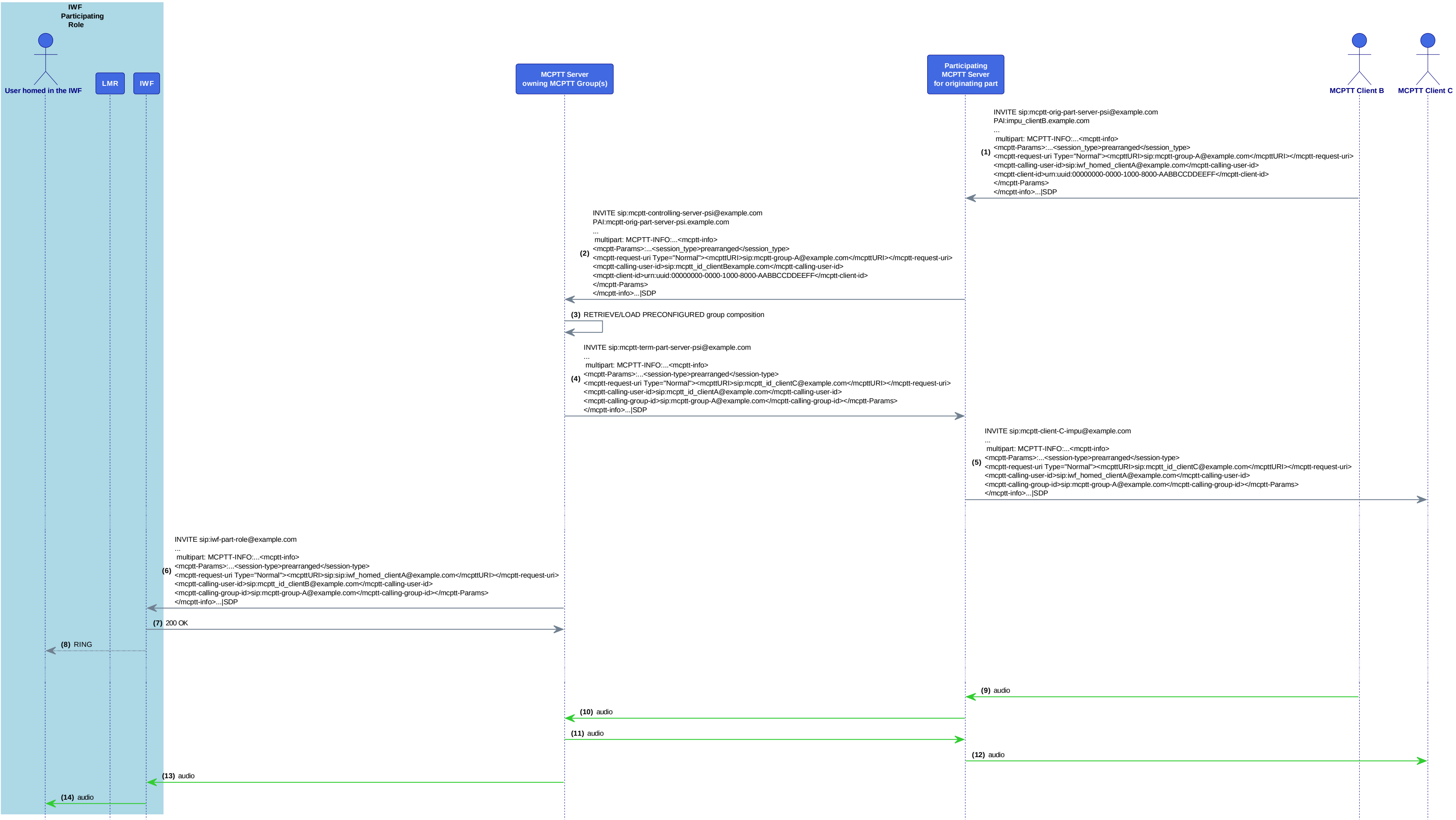

Figure 154: IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 168: IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/02

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, and MCPTT side initiated prearranged group call properly stablished		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_PART • IWF-MCPTT-Part_ONN-MCPTT-CALL • IWF-MCPTT-Part_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT user intiates a prearranged group call to mcptt_groupA
	2	check	Resulting INVITE is sent to the PSI of the participating serving the MCPTT user and later forwarded to the controlling owning the group
	3	check	The controlling server retrieves the list of group members, allocates the session ID and sends a 200 OK back
	4	check	"n-1" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n) and another one in the IWF as terminating particpating
	5	check	"n" INVITEs received at the affiliated mcptt_id_clientX and the LMR user
	6	check	"n" SIP dialogs established
	7	verify	Call connected and multiple media flows exchanged from the LMR user to those in the MCPTT side
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.5 IWF performing the terminating participating procedures receives an INVITE associated to a chat MCPTT group call targeting a user homed in the IWF [IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/03]

According to clause 10.1.2.4.1 in ETSI TS 124 379 [9] when an in-progress emergency state of the group is set to a value of "false" and the MCPTT controlling servers receives an SIP INVITE with either imminent peril or emergency indications set to a value of "true" it will generate SIP INVITE requests for the MCPTT emergency group call to the affiliated but not joined members of the chat MCPTT group as specified in clause 6.3.3.1.7.

Such request, when reaching the IWF acting with the terminating participating role will result on the steps defined in clauses 10.2.2.1.3 and 10.2.1.1.6 in ETSI TS 129 379 [48]. That is, it will update the group call status according to the indication, accept the SIP INVITE request and generate a SIP 200 (OK) with the associated SDP answer.

Message Sequence Diagram

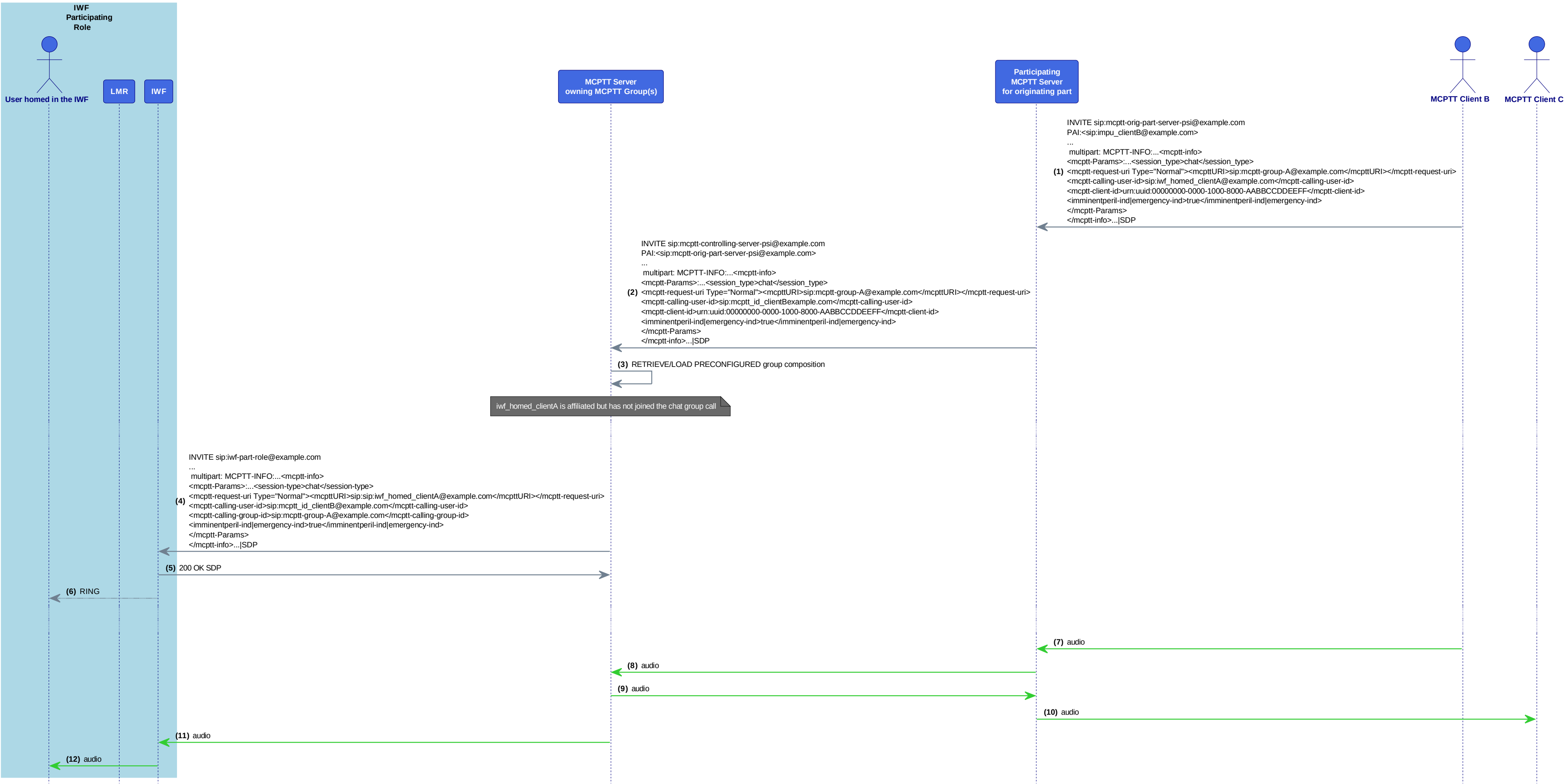

Figure 155: IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/03 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 169: IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/03

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, and emergency/imminent-peril MCPTT chat group call leading to calling affiliated but not joined members		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_PART • IWF-MCPTT-Part_ONN-MCPTT-CALL • IWF-MCPTT-Part_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT user sends a SIP INVITE with the emergency/imminent-peril indications for mcptt_groupA
	2	check	Resulting INVITE is sent to the PSI of the participating serving the MCPTT user and later forwarded to the controlling owning the group
	3	check	The controlling server retrieves the list of group members, checks those affiliated but not yet joined members and sends an INVITE to them (due to the emergency/imminent-peril ind)
	4	check	INVITE for the iwf_homed_clientA user received at the LMR in terminating participant role
	5	check	LMR user joined the ongoing MCPTT chat group call
	6	verify	Call connected and multiple media flows exchanged from the LMR user to those in the MCPTT side
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.6 IWF performing the terminating participating procedures receives a reINVITE associated to a chat MCPTT group call targeting a user homed in the IWF [IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/04]

Similarly to [IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/03] in this test case on of the MCPTT users upgrades an ongoing chat group call to emergency/imminent-peril resulting on the controlling MCPTT server sending reINVITES to all affiliated and joined members of the group.

Such request, when reaching the IWF acting with the terminating participating role will result on the steps defined in clauses 10.2.2.1.4 and 10.2.1.1.2 in ETSI TS 129 379 [48]. That is, it will update the group call status according to the indication, accept the SIP INVITE request and generate a SIP 200 (OK) with the associated SDP answer.

Message Sequence Diagram

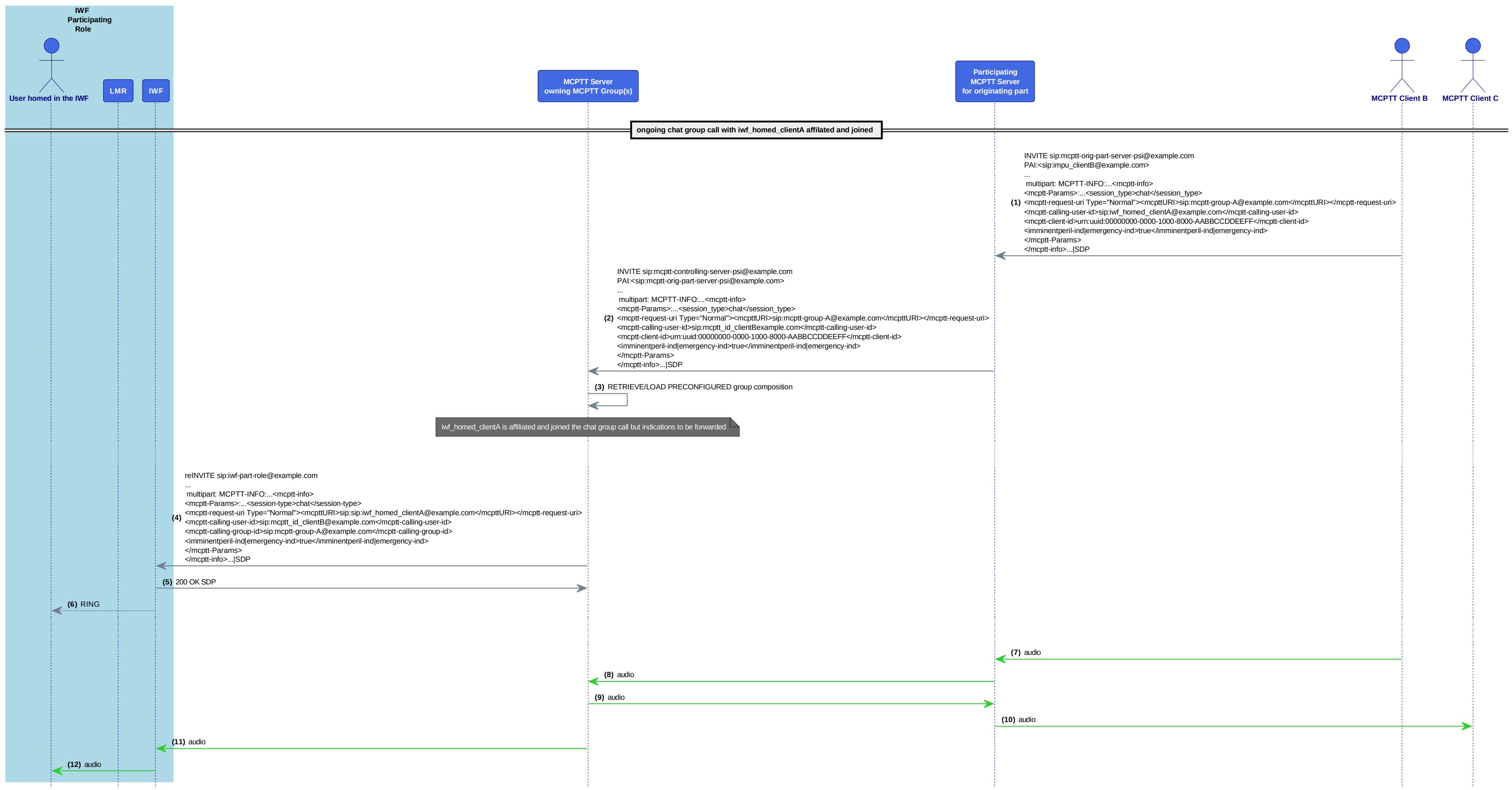

Figure 156: IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/04 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 170: IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/04

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/PAR/GROUP/CHAT/ONDEM/NFC/04		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, an ongoing chat group call upgraded to emergency/imminent-peril leading to reINVITing affiliated and joined members		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_PART • IWF-MCPTT-Part_ONN-MCPTT-CALL • IWF-MCPTT-Part_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • Ongoing chat group call		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT user sends a SIP INVITE with the emergency/imminent-peril indications for the mcptt_groupA (ongoing chat group call)
	2	check	Resulting INVITE is sent to the PSI of the participating serving the MCPTT user and later forwarded to the controlling owning the group
	3	check	The controlling server retrieves the list of group members, checks those affiliated and joined members and sends a reINVITE to them (due to the emergency/imminent-peril ind)
	4	check	INVITE for the iwf_homed_clientA user received at the LMR in terminating participant role
	5	check	LMR user joined the ongoing MCPTT chat group call
	6	verify	Call connected and multiple media flows exchanged from the LMR user to those in the MCPTT side
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.7 IWF in participating role originates an on demand MCPTT private call in manual commencement mode with floor control on behalf of an LMR user [IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WFC/NFC/01]

Following clauses 11.1.2.1.1 and 6.2.2 in ETSI TS 129 379 [48], the IWF performing the participating role initiates an on-demand private call by determining a) the MCPTT ID of the calling user 2) the public service identity of the controlling MCPTT function for the private call service associated with the originating user's MCPTT ID identity and shall generate a SIP INVITE request as specified in clause 11.1.1.1.1 with the modifications in clause 6.6.2.1.2.

That is, the IWF shall set the Request-URI to the public service identity of the controlling MCPTT function hosting the private call service, the <mcptt-calling-user-id> element in an application/vnd.3gpp.mcptt-info+xml MIME body of the SIP INVITE request to the MCPTT ID of the calling user and a MIME resource-lists body with the MCPTT ID of the invited MCPTT user, according to rules and procedures of IETF RFC 5366 [30].

The SIP INVITE requested by the user homed in the IWF shall include an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [31]. The MCPTT server shall return a SIP 180 (Ringing) response to confirm the manual commencement mode which shall be forwarded to the IWF to the LMR user. The MCPTT server confirms acceptance by a SIP 200 (OK) response, after which the private call is established.

Note that WFC stands for "with 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.

No security procedures are depicted in the diagram for simplicity purposes but step 6 in clause 11.1.1.1.1 describes the whole mechanism.

Message Sequence Diagram

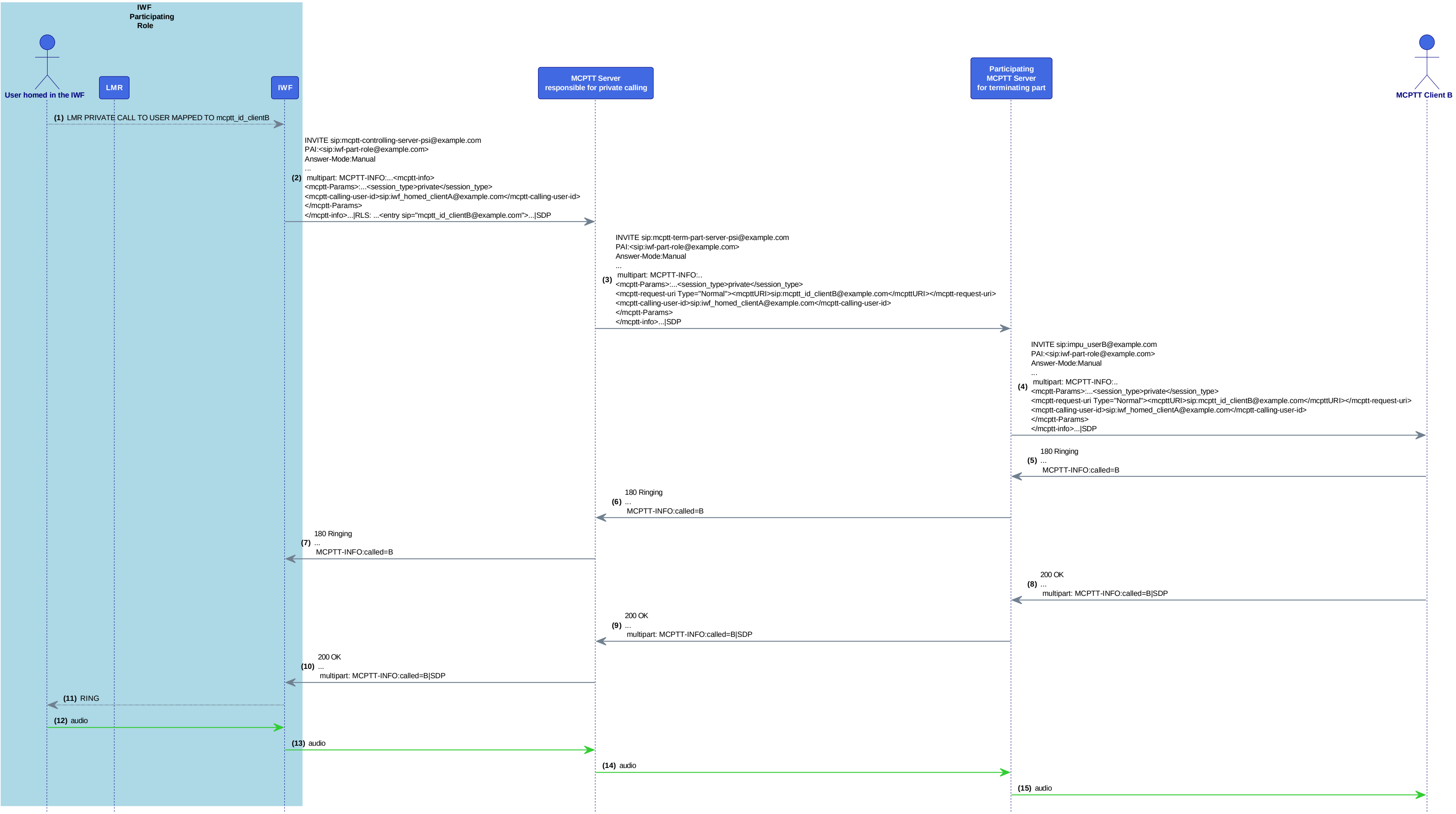

Figure 157: IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WFC/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 171: IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WFC/NFC/01

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WFC/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, LMR user triggering a private call to a MCPTT user in manual commencement mode		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_PART • IWF-MCPTT-Part_ONN-MCPTT-CALL • IWF-MCPTT-Part_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	LMR user triggers a private call towards a user mapped to a mcptt_id (i.e. mpctt_id_clientB)
	2	check	Resulting INVITE is sent from the IWF acting as participating on behalf of the LMR user to the controlling providing the private calling function to the LMR user
	3	check	The controlling server forwards it to the terminating participating
	4	check	MCPTT client receives the INVITE, send a notification to the user (i.e. rings) and sends back a 180 ringing
	5	check	Upon user taking the call a 200 ok is generated and forwarded back to the IWF
	6	verify	Call connected and private call between LMR and MCPTT user stablished
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.8 IWF in participating role originates an on demand MCPTT private call in automatic commencement mode with floor control on behalf of an LMR user [IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WFC/NFC/01]

This test covers the Automatic commencement mode of a private call with floor control from a LMR user to a MCX user, whereby the IWF has a participating role. The procedure is described in clause 11.1.1.1 (for Private Call) and clause 6.2.1 (for Automatic commencement mode) in ETSI TS 129 379 [48].

The SIP INVITE requested by the user homed in the IWF shall include an Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [31].

Message Sequence Diagram

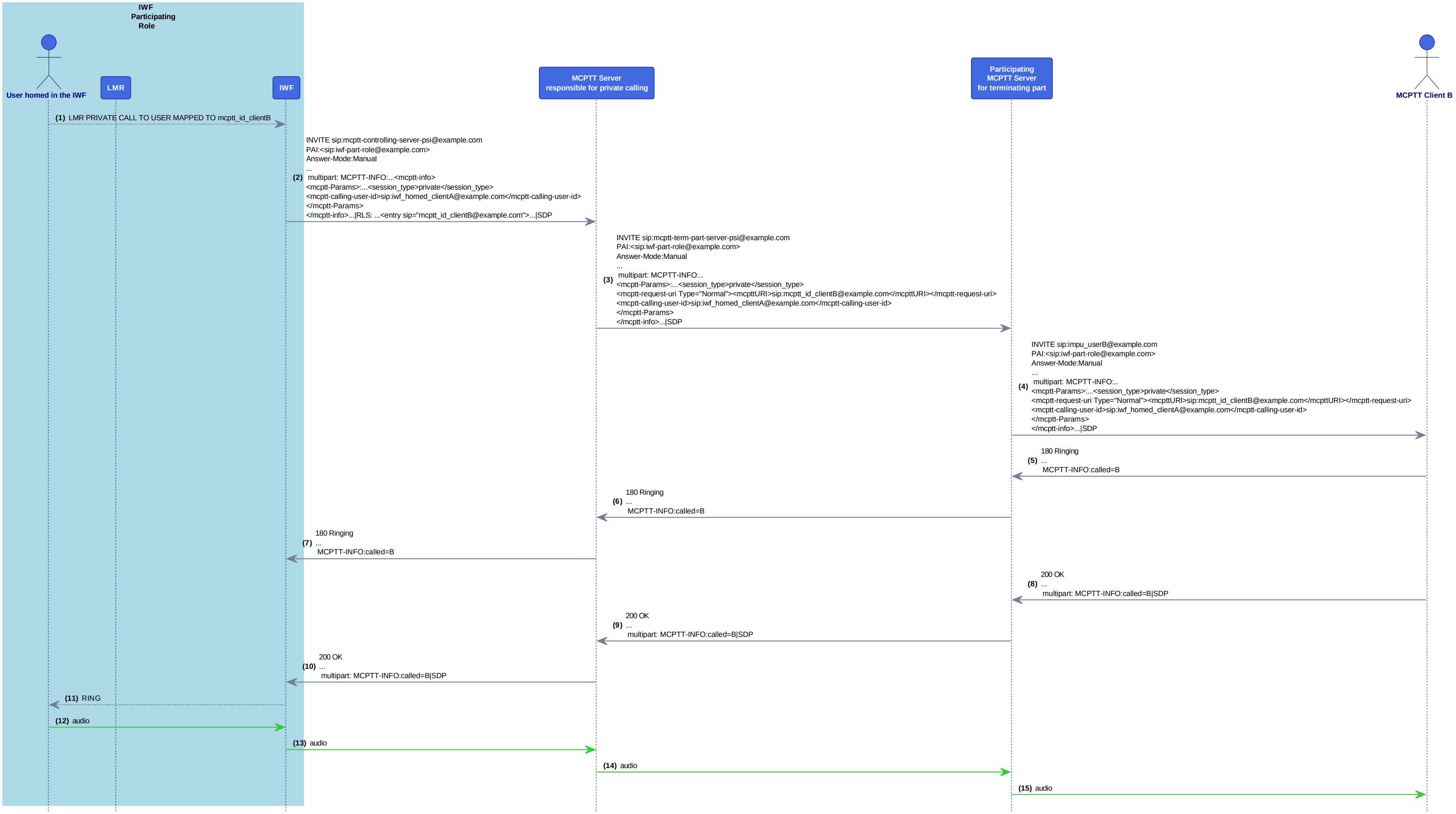

Figure 158: IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WFC/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 172: IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WFC/NFC/01

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WFC/NFC/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, LMR user triggering a private call to a MCPTT user in Automatic commencement mode</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• IWF-MCPTT_AFFIL
• IW-MCPTT_PART
• IWF-MCPTT-Part_ONN-MCPTT-CALL
• IWF-MCPTT-Part_MCPTT-FC
• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)
• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)
• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode
• LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively
• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="6">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>LMR user triggers a private call towards a user mapped to a mcptt_id (i.e. mpctt_id_clientB) in Auto commencement mode</td></tr>
<tr><td>2</td><td>check</td><td>Resulting INVITE is sent from the IWF acting as participating on behalf of the LMR user to the controlling providing the private calling function to the LMR user</td></tr>
<tr><td>3</td><td>check</td><td>The controlling server forwards it to the terminating participating</td></tr>
<tr><td>4</td><td>check</td><td>200 ok is generated and forwarded back to the IWF</td></tr>
<tr><td>5</td><td>verify</td><td>Call connected and private call between LMR and MCPTT user stablished</td></tr>
<tr><td colspan="4">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 9.2.2.2.11 in ETSI TS 124 379 [9].</td></tr>
</table>

11.3.9 IWF performing the terminating participating procedures receives an on demand MCPTT private call in manual commencement mode with floor control on behalf of an LMR user [IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WFC/NFC/02]

This test covers the Manual commencement mode of a private call with floor control from an MCTT user to a user homed in an IWF with a participating role. The procedure is described in clause 11.1.2.2 (for Private Call) and clause 6.2.2 (for Manual commencement mode) in ETSI TS 129 379 [48].

Upon receipt of a "SIP INVITE request for terminating participating MCPTT function", the IWF performing the participating role shall use the MCPTT ID present in the <mcptt-request-uri> element of the application/vnd.3gpp.mcptt-info+xml MIME body to retrieve the binding between the MCPTT ID and LMR user, accept the SIP INVITE request and generate a SIP 180 (Ringing) response and to be sent to the controlling MCPTT function.

The IWF confirms acceptance by a SIP 200 (OK) response, after which the private call is established.

Message Sequence Diagram

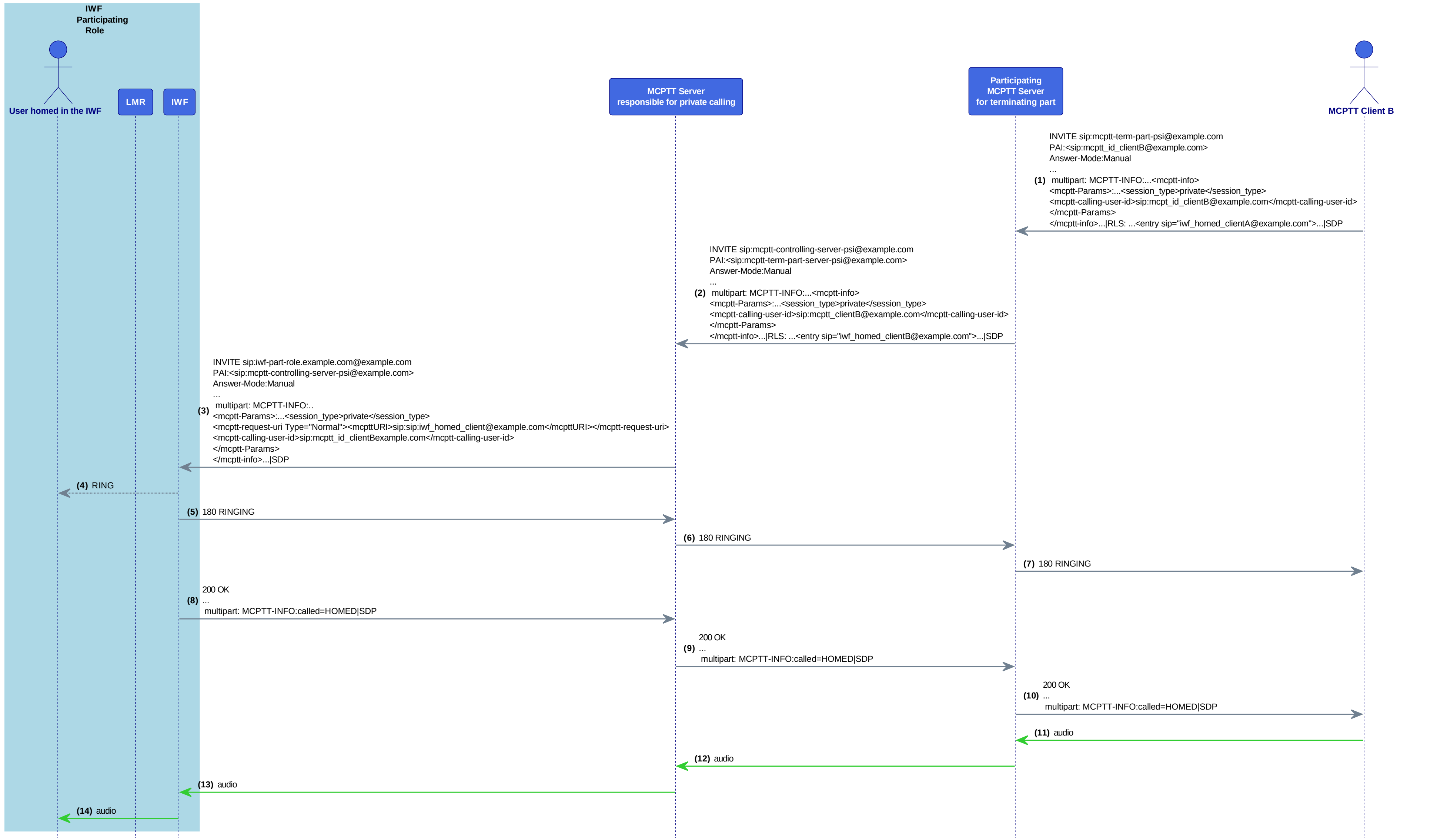

Figure 159: IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WFC/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 173: IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WFC/NFC/02

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WFC/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, MCPTT user triggering a private call to a LMR homed user in manual commencement mode		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_PART • IWF-MCPTT-Part_ONN-MCPTT-CALL • IWF-MCPTT-Part_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT user triggers a private call in manual commencement mode towards a user homed in the IWF
	2	check	Resulting INVITE is forwarded from the participating serving the user to the controlling providing the private calling function
	3	check	The controlling server forwards it to the IWF acting as terminating participating role
	4	check	180 RINGING is generated and forwarded back to the controlling then participating
	5	check	200 OK generated (once the LMR user takes the call) and forwarded back to the MCPTT user
	6	verify	Call connected and private call between LMR and MCPTT user stablished
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.10 IWF performing the terminating participating procedures receives an on demand MCPTT private call in automatic commencement mode with floor control on behalf of an LMR user [IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WFC/NFC/02]

This test covers the Automatic commencement mode of a private call with floor control from a MCX user to a LMR user, whereby the IWF has a participating role. The procedure is described in clause 11.1.2.2 (for Private Call) and clause 6.2.1 (for Automatic commencement mode) in ETSI TS 129 379 [48].

The SIP INVITE requested by the user homed in the MCPTT server shall include an Answer-Mode header field with the value "Automatic" according to the rules and procedures of IETF RFC 5373 [31].

Message Sequence Diagram

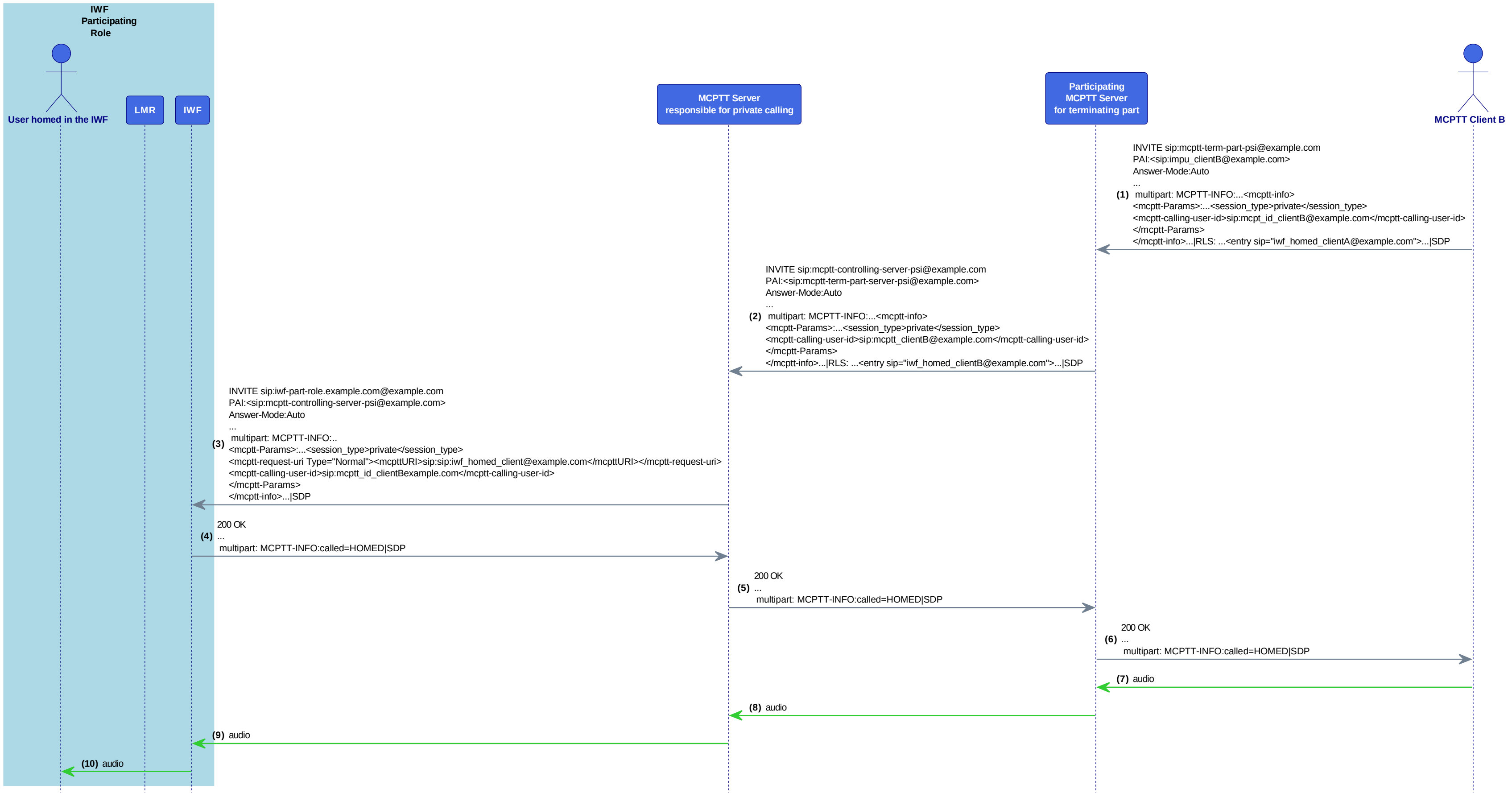

Figure 160: IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WFC/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 174: IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WFC/NFC/02

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WFC/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, MCPTT user triggering a private call to a LMR homed user in automatic commencement mode		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_PART • IWF-MCPTT-Part_ONN-MCPTT-CALL • IWF-MCPTT-Part_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT user triggers a private call in automatic commencement mode towards a user homed in the IWF
	2	check	Resulting INVITE is forwarded from the participating serving the user to the controlling providing the private calling function
	3	check	The controlling server forwards it to the IWF acting as terminating participating role
	4	check	200 OK generated and forwarded back to the MCPTT user
	5	verify	Call connected and private call between LMR and MCPTT user stablished
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.11 IWF in participating role originates an on demand MCPTT private call in manual commencement mode without floor control on behalf of an LMR user [IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WOFC/NFC/01]

This test covers the Manual commencement mode of a private call without floor control from a LMR user to a MCX user, whereby the IWF has a participating role. The procedure is described in clause 11.2.1.1 (for Private Call) and clause 6.2.2 (for Manual commencement mode) in ETSI TS 129 379 [48].

The test is equivalent to that in clause [IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WFC/NFC/01] but with no media-level section for the media floor control entity in the exchanged SDPs (therefore the high level message sequence diagram will be equivalent to that).

The SIP INVITE requested by the user homed in the IWF shall include an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [31]. The MCPTT server shall return a SIP 180 (Ringing) response to confirm the manual commencement mode which shall be forwarded by the IWF to the LMR user. The MCPTT server confirms acceptance by a SIP 200 (OK) response, after which the private call is established.

Message Sequence Diagram

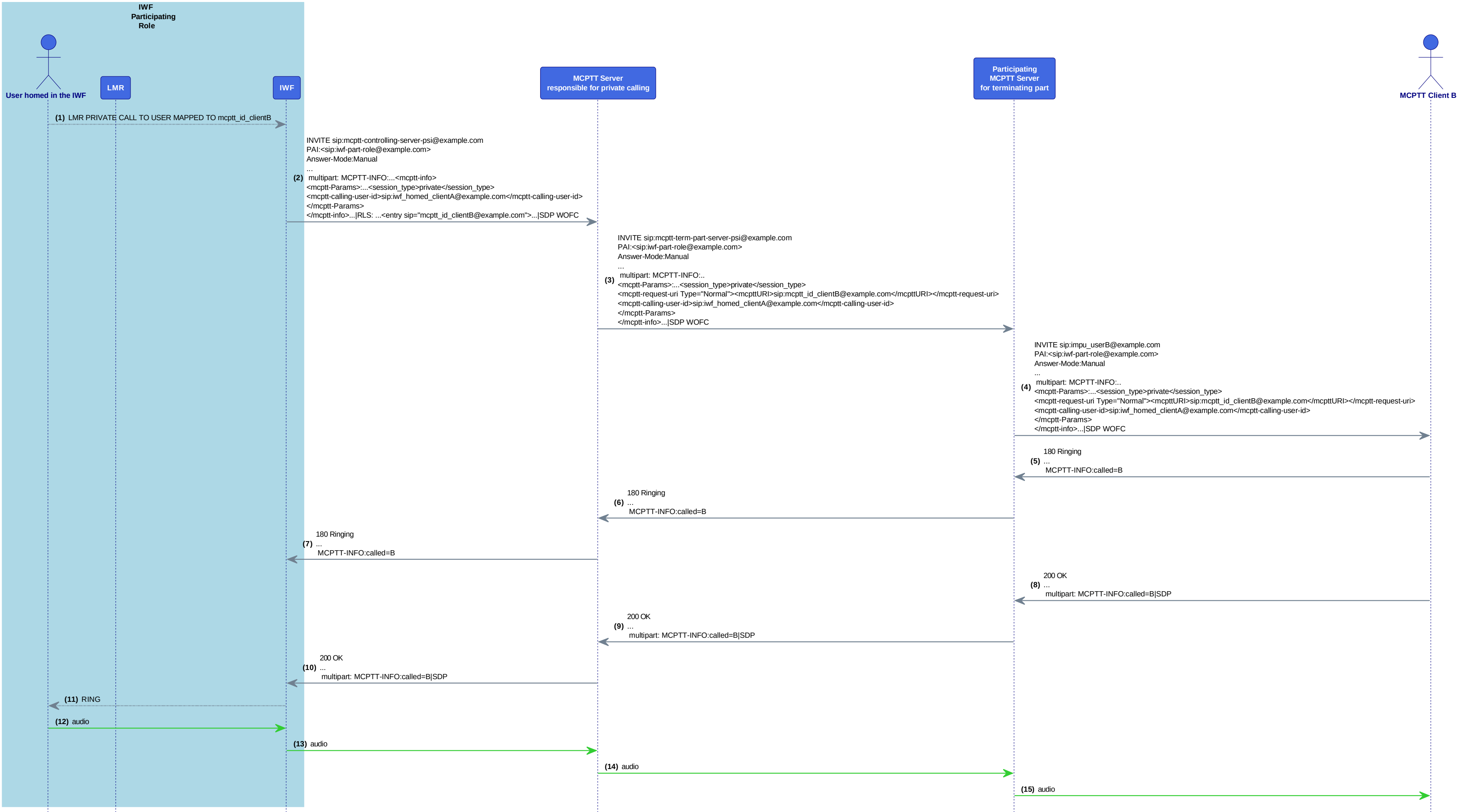

Figure 161: IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WOFC/NFC/01 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 175: IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WOFC/NFC/01

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WOFC/NFC/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, LMR user triggering a private call to a MCPTT user in manual commencement mode without floor control</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• IWF-MCPTT_AFFIL
• IW-MCPTT_PART
• IWF-MCPTT-Part_ONN-MCPTT-CALL
• IWF-MCPTT-Part_MCPTT-FC
• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)
• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)
• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode
• LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively
• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td></td><td>1</td><td>stimulus</td><td>LMR user triggers a private call towards a user mapped to a mcptt_id (i.e. mpctt_id_clientB)</td></tr>
<tr><td></td><td>2</td><td>check</td><td>Resulting INVITE is sent from the IWF acting as participating on behalf of the LMR user to the controlling providing the private calling function to the LMR user. The SDP lacks the floor control related media level section.</td></tr>
<tr><td></td><td>3</td><td>check</td><td>The controlling server forwards it to the terminating participating</td></tr>
<tr><td></td><td>4</td><td>check</td><td>MCPTT client receives the INVITE, send a notification to the user (i.e. rings) and sends back a 180 ringing</td></tr>
<tr><td></td><td>5</td><td>check</td><td>Upon user taking the call a 200 ok is generated and forwarded back to the IWF</td></tr>
<tr><td></td><td>6</td><td>verify</td><td>Call connected and private call between LMR and MCPTT user stablished</td></tr>
<tr><td colspan="4">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 9.2.2.2.11 in ETSI TS 124 379 [9].</td></tr>
</table>

11.3.12 IWF in participating role originates an on demand MCPTT private call in automatic commencement mode without floor control on behalf of an LMR user [IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WOFC/NFC/01]

This test covers the Automatic commencement mode of a private call without floor control from a LMR user to a MCX user, whereby the IWF has a participating role. The procedure is described in clause 11.2.1.1 (for Private Call) and clause 6.2.1 (for Automatic commencement mode) in ETSI TS 129 379 [48].

The test is equivalent to that in [IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WFC/NFC/01] but with no media-level section for the media floor control entity in the exchanged SDPs.

The SIP INVITE requested by the user homed in the IWF shall include an Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [31].

Message Sequence Diagram

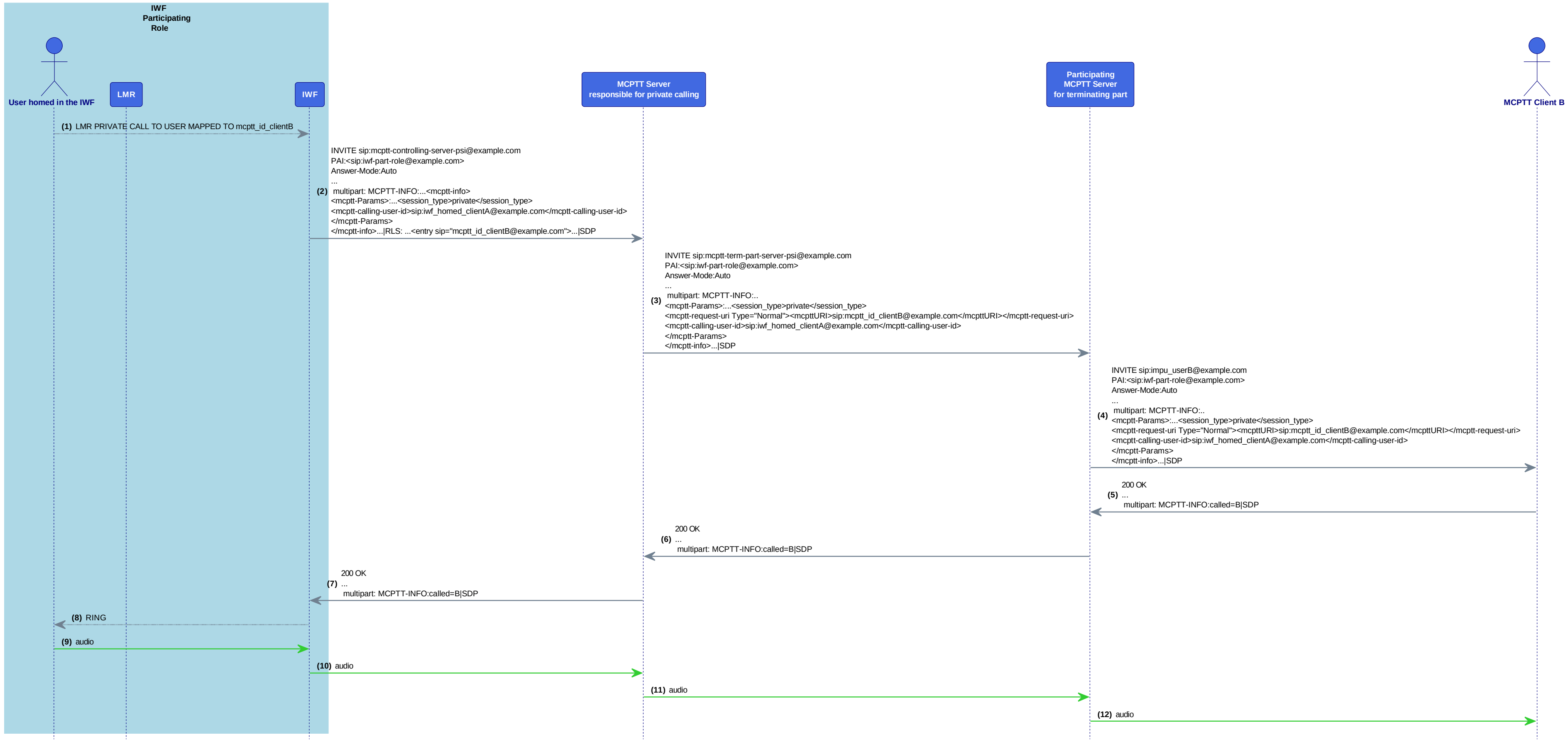

Figure 162: IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WOFC/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 176: IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WOFC/NFC/01

<table>
<tr><th colspan="4">Interoperability Test Description</th></tr>
<tr><td>Identifier</td><td colspan="3">IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WOFC/NFC/01</td></tr>
<tr><td>Test Objective</td><td colspan="3">Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, LMR user triggering a private call to a MCPTT user in automatic commencement mode without floor control</td></tr>
<tr><td>Configuration(s)</td><td colspan="3">• CFG_ONN_OTT-1 (clause 5.2)
• CFG_ONN_UNI-MC-LTE-1 (clause 5.3)
• CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)</td></tr>
<tr><td>References</td><td colspan="3">• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])</td></tr>
<tr><td>Applicability</td><td colspan="3">• IWF-MCPTT_AFFIL
• IW-MCPTT_PART
• IWF-MCPTT-Part_ONN-MCPTT-CALL
• IWF-MCPTT-Part_MCPTT-FC
• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB
• MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2)
• MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note)
• MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only)
• MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5)
• MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pre-test conditions</td><td colspan="3">• IP connectivity among all elements of the specific scenario
• Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode
• LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively
• Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="6">Test Sequence</td><td>Step</td><td>Type</td><td>Description</td></tr>
<tr><td>1</td><td>stimulus</td><td>LMR user triggers a private call towards a user mapped to a mcptt_id (i.e. mpctt_id_clientB)</td></tr>
<tr><td>2</td><td>check</td><td>Resulting INVITE is sent from the IWF acting as participating on behalf of the LMR user to the controlling providing the private calling function to the LMR user. The SDP lacks the floor control related media level section.</td></tr>
<tr><td>3</td><td>check</td><td>The controlling server forwards it to the terminating participating</td></tr>
<tr><td>4</td><td>check</td><td>Upon user taking the call a 200 ok is generated and forwarded back to the IWF</td></tr>
<tr><td>5</td><td>verify</td><td>Call connected and private call between LMR and MCPTT user stablished</td></tr>
<tr><td colspan="4">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 9.2.2.2.11 in ETSI TS 124 379 [9].</td></tr>
</table>

11.3.13 IWF performing the terminating participating procedures receives an on demand MCPTT private call in manual commencement mode without floor control on behalf of an LMR user [IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WOFC/NFC/02]

This test covers the Manual commencement mode of a private call without floor control from a MCX user to a LMR user, whereby the IWF has a participating role. The procedure is described in clause 11.2.1.2 (for Private Call) and clause 6.2.2 (for Manual commencement mode) in ETSI TS 129 379 [48].

The test is equivalent to that in [IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WFC/NFC/02] but with no media-level section for the media floor control entity in the exchanged SDPs.

Message Sequence Diagram

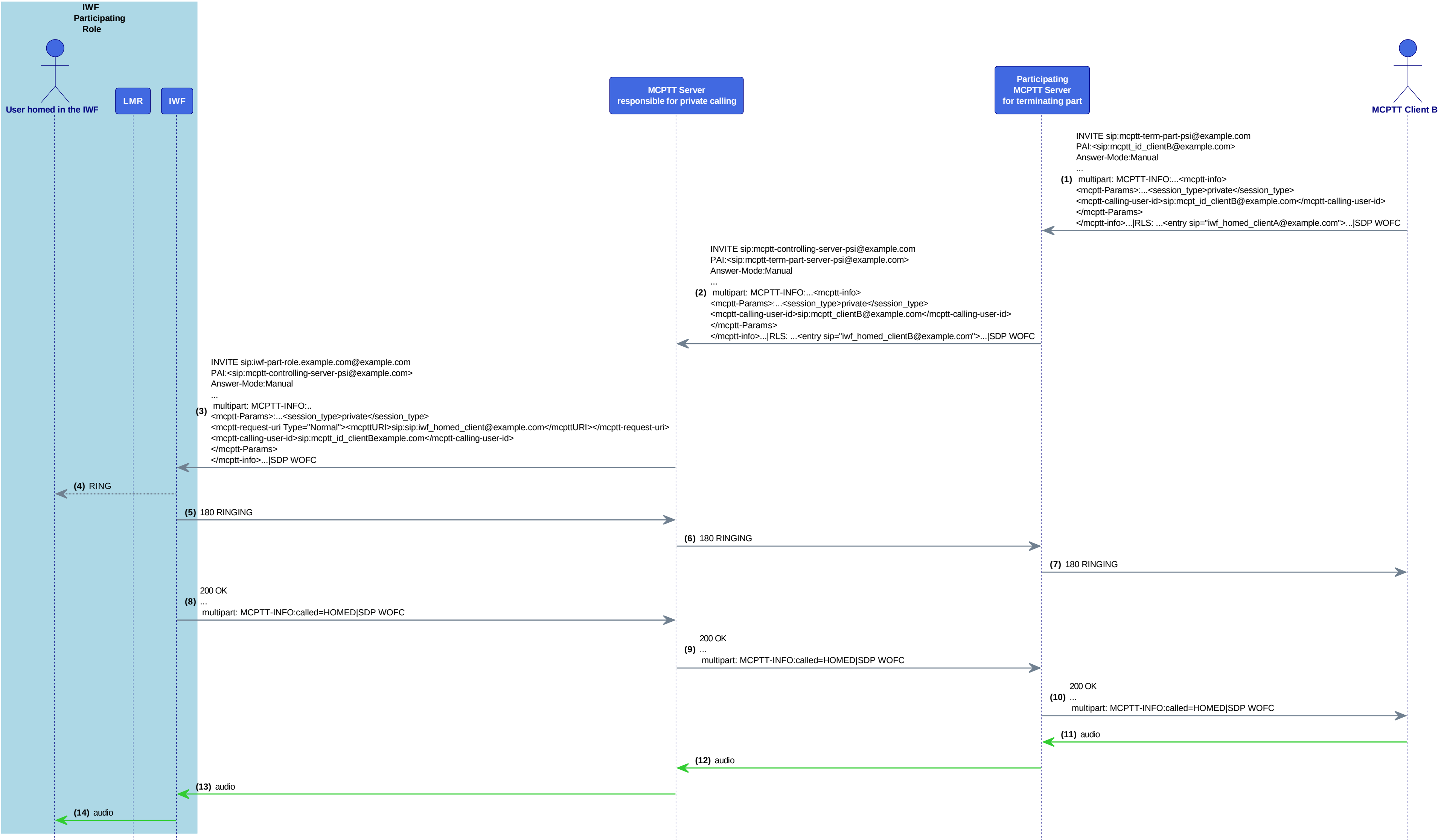

Figure 163: IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WOFC/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 177: IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WOFC/NFC/02

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/PAR/PRIV/MANUAL/ONDEM/WOFC/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, MCPTT user triggering a private call to a LMR homed user in manual commencement mode without floor control		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_PART • IWF-MCPTT-Part_ONN-MCPTT-CALL • IWF-MCPTT-Part_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT user triggers a private call in manual commencement mode towards a user homed in the IWF
	2	check	Resulting INVITE is forwarded from the participating serving the user to the controlling providing the private calling function. The SDP lacks the floor control related media level section.
	3	check	The controlling server forwards it to the IWF acting as terminating participating role
	4	check	180 RINGING is generated and forwarded back to the controlling then participating
	5	check	200 OK generated (once the LMR user takes the call) and forwarded back to the MCPTT user
	6	verify	Call connected and private call between LMR and MCPTT user stablished
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.14 IWF performing the terminating participating procedures receives an on demand MCPTT private call in automatic commencement mode without floor control on behalf of an LMR user [IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WOFC/NFC/02]

This test covers the Automatic commencement mode of a private call without floor control from a MCX user to a LMR user, whereby the IWF has a participating role. The procedure is described in clause 11.2.1.2 (for Private Call) and clause 6.2.1 (for Automatic commencement mode) in ETSI TS 129 379 [48].

The test is equivalent to [IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WFC/NFC/02]but with no media-level section for the media floor control entity in the exchanged SDPs.

The SIP INVITE requested by the user homed in the MCPTT server shall include an Answer-Mode header field with the value "Automatic" according to the rules and procedures of IETF RFC 5373 [31].

Message Sequence Diagram

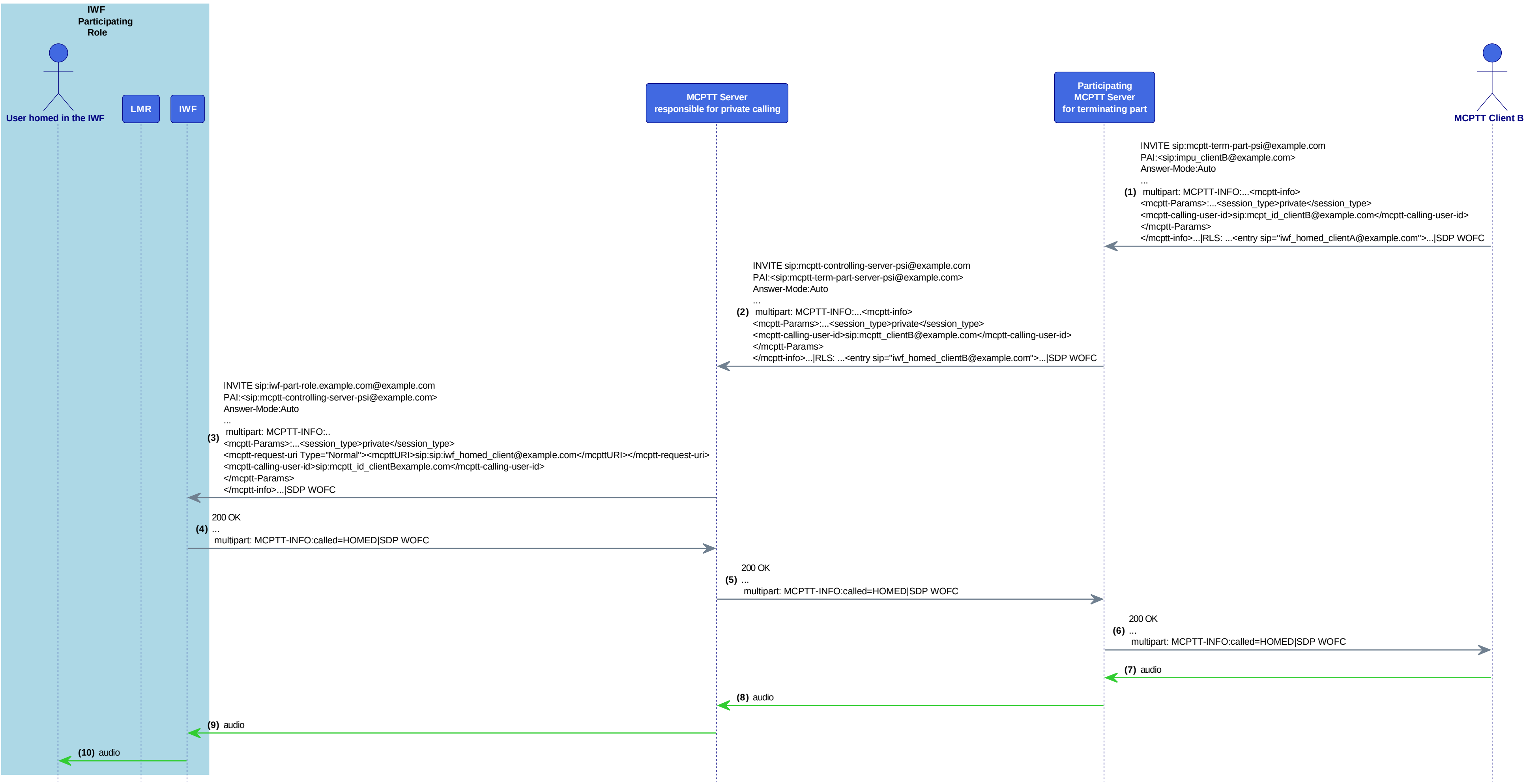

Figure 164: IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WOFC/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 178: IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WOFC/NFC/02

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/PAR/PRIV/AUTO/ONDEM/WOFC/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, MCPTT user triggering a private call to a LMR homed user in automatic commencement mode without floor control		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_PART • IWF-MCPTT-Part_ONN-MCPTT-CALL • IWF-MCPTT-Part_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT user triggers a private call in automatic commencement mode towards a user homed in the IWF
	2	check	Resulting INVITE is forwarded from the participating serving the user to the controlling providing the private calling function. The SDP lacks the floor control related media level section.
	3	check	The controlling server forwards it to the IWF acting as terminating participating role
	4	check	200 OK generated and forwarded back to the MCPTT user
	5	verify	Call connected and private call between LMR and MCPTT user stablished
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.15 IWF in controlling role invites an MCPTT user to an on-demand prearranged MCPTT group call initiated by an LMR user [IWF/MCPTT/CONN/ONN/CTRL/GROUP/PREA/ONDEM/NFC/01]

This test comprises the establishment of an on-demand prearranged Group Call initiated from a LMR user when the IWF plays the controlling role.

Therefore, upon the LMR user triggering a group call, the resulting IWF's SIP signalling will be evaluated. Similarly to [CONN-MCPTT/ONN/GROUP/PREA/ONDEM/NFC/01] no floor control -NFC- mechanisms will be specifically considered apart from the simplest case for verifying e2e communications.

NOTE: Unless otherwise specified no emergency or imminent peril conditions will not be considered.

As stated in clause 10.1.4.1.1 in ETSI TS 129 379 [48] to establish an MCPTT prearranged group session, the IWF performing the controlling role shall generate an initial SIP INVITE as specified in clause 6.6.3.1.1. That then means that the IWF will generate a SIP INVITE with a Referred-By header field with the public service identity of the IWF and an application/vnd.3gpp.mcptt-info+xml MIME body with the <mcpttinfo> element containing the <mcptt-Params> element with the <session-type> element set to a value of "prearranged", the <mcptt-request-uri> element set to the MCPTT ID of the terminating user, the <mcptt-calling-group-id> element set to the group identity, the <mcptt-calling-user-id> to the MCPTT ID of the calling user homed at the IWF and, finally, the <mcptt-client-id> element set to a value determined by the IWF.

On receiving the SIP 2xx response to the SIP INVITE request, the IWF performing the controlling role shall interact with the user plane as specified in ETSI TS 129 380 [49], send a SIP NOTIFY request to all MCPTT participants with a subscription to the conference event package and increment the local counter of the number of SIP 200 (OK) responses received from invited members, by 1.

Message Sequence Diagram

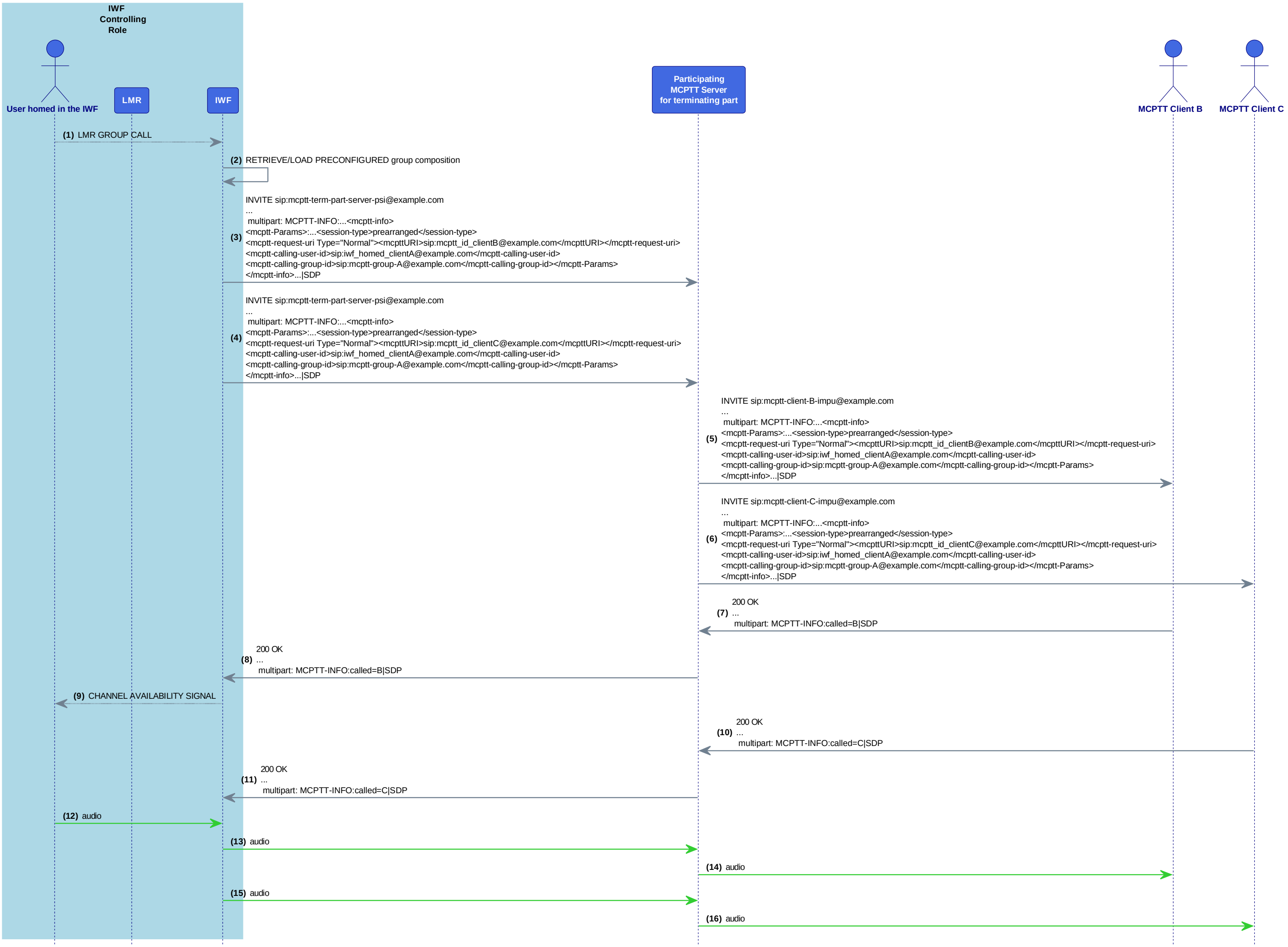

Figure 165: IWF/MCPTT/CONN/ONN/CTRL/GROUP/PREA/ONDEM/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 179: IWF/MCPTT/CONN/ONN/CTRL/GROUP/PREA/ONDEM/NFC/01

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/CTRL/GROUP/PREA/ONDEM/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, LMR user triggering a prearranged group call through an IWF in controlling role		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_CTRL • IWF-MCPTT-Ctrl_ONN-MCPTT-CALL • IWF-MCPTT-Ctrl_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	LMR user homed in an IWF in controlling mode triggers on demand prearranged group call
	2	check	The IWF retrieves the group information from the GMS and submits "n" INVITE to the affiliated group members
	3	check	The controlling server retrieves the list of group members and sends "n" INVITES to the terminating participating server(s) serving the group members
	4	check	"n" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	5	check	"n" INVITEs received at the affiliated mcptt_id_clientX
	6	check	"n" SIP dialogs established
	7	verify	Call connected and multiple media flows exchanged from the LMR user to those in the MCPTT side
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.16 IWF in controlling role receives the request to establish an on-demand prearranged MCPTT group call initiated by an MCPTT user [IWF/MCPTT/CONN/ONN/CTRL/GROUP/PREA/ONDEM/NFC/02]

This test comprises the establishment of an on-demand prearranged Group Call initiated by a MCPTT user when the IWF plays the controlling role.

In this case the on-demand prearranged MCPTT group call is initiated by an MCPTT client. Resulting INVITE is then forwarded by the participating to the IWF on a controlling role. The IWF therefore follows clause 10.1.4.2 in ETSI TS 129 379 [48]. More specifically, when both the call origination and termination are MCPTT functions, the IWF shall follow ETSI TS 124 379 [9], clause 10.1.1.4.2.

Message Sequence Diagram

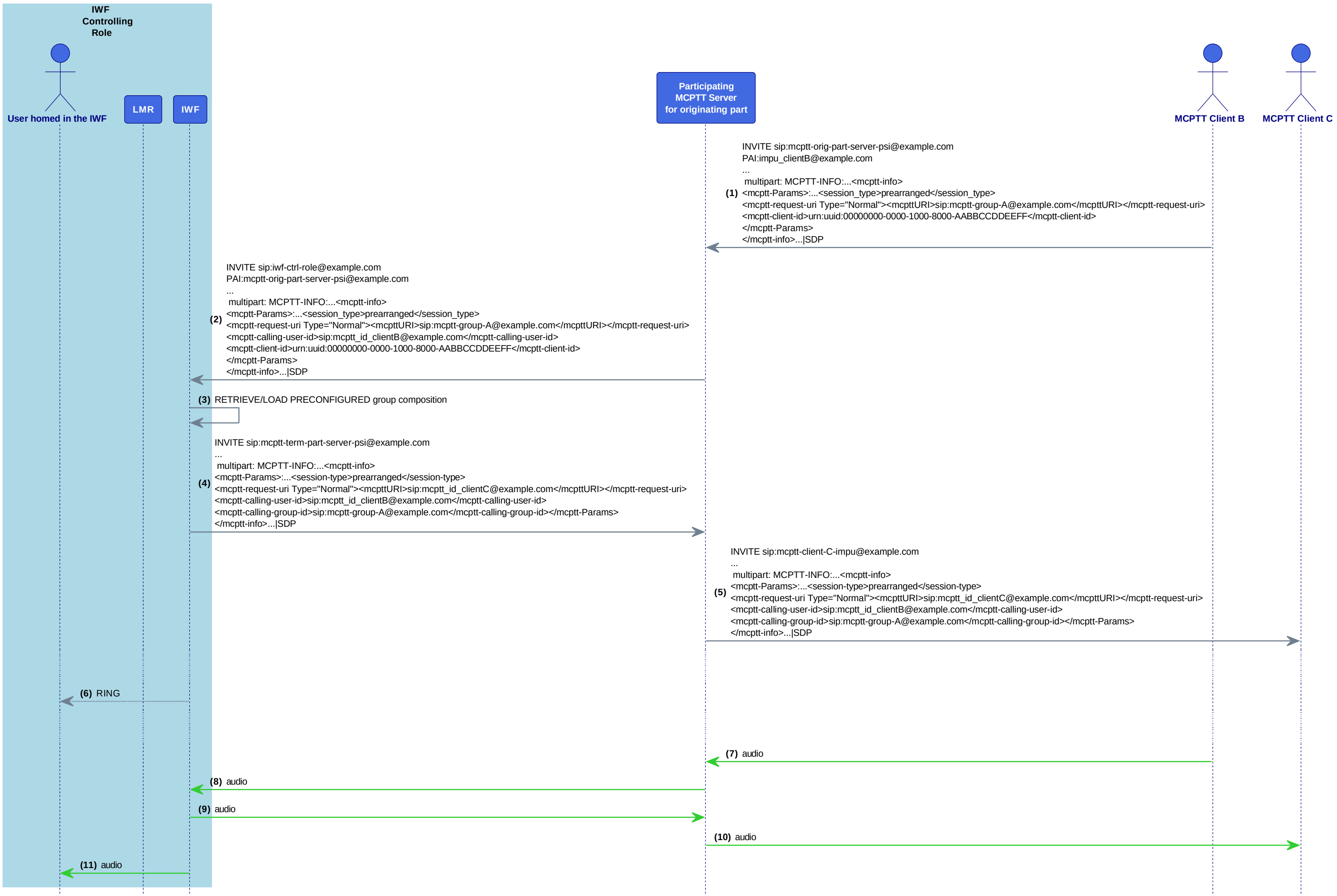

Figure 166: IWF/MCPTT/CONN/ONN/CTRL/GROUP/PREA/ONDEM/NFC/02 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 180: IWF/MCPTT/CONN/ONN/CTRL/GROUP/PREA/ONDEM/NFC/02

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/CTRL/GROUP/PREA/ONDEM/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, MCPTT user triggering a prearranged group call towards an IWF in controlling role owning the group		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_CTRL • IWF-MCPTT-Ctrl_ONN-MCPTT-CALL • IWF-MCPTT-Ctrl_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT triggers an on demand prearranged group call for a group owned by the IWF in a controlling role
	2	check	Resulting INVITE is forwarded by the participating server serving the user to the IWF owning the group
	3	check	The IWF retrieves the group information from the GMS and submits "n-1" INVITE to the affiliated group members and the LMR user(s) affiliated members of the group
	4	check	"n-1" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	5	check	"n-1" INVITEs received at the affiliated mcptt_id_clientX
	6	check	"n-1" SIP dialogs established
	7	verify	Call connected and multiple media flows exchanged from all the LMR and MCPTT users
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.17 IWF in controlling role receives the request to establish an MCPTT chat session [IWF/MCPTT/CONN/ONN/CTRL/GROUP/CHAT/ONDEM/NFC/01]

This test comprises the establishment of chat group call initiated by a MCPTT user when the IWF plays the controlling role.

Resulting SIP INVITE from the MCPTT client is then forwarded by the participating to the IWF on a controlling role. The IWF therefore follows clause 10.2.3.1.1 in ETSI TS 129 379 [48]: assuming the MCPTT user is already affiliated, the IWF processes the incoming SIP INVITE with <mcptt-calling-user-id> including the MCPTT ID, <mcptt-request-uri> with the chat group identity, retrieve the necessary group document(s) from the group management server for the group identity contained in the SIP INVITE request and carry out initial processing as specified in clause 6.3.5.2 in ETSI TS 124 379 [9].

As mentioned the LMR specific counterpart for the chat group call is not in the scope of the plugtests, therefore the participants will need to evaluate "manually" the chat group call is correctly stablished.

Message Sequence Diagram

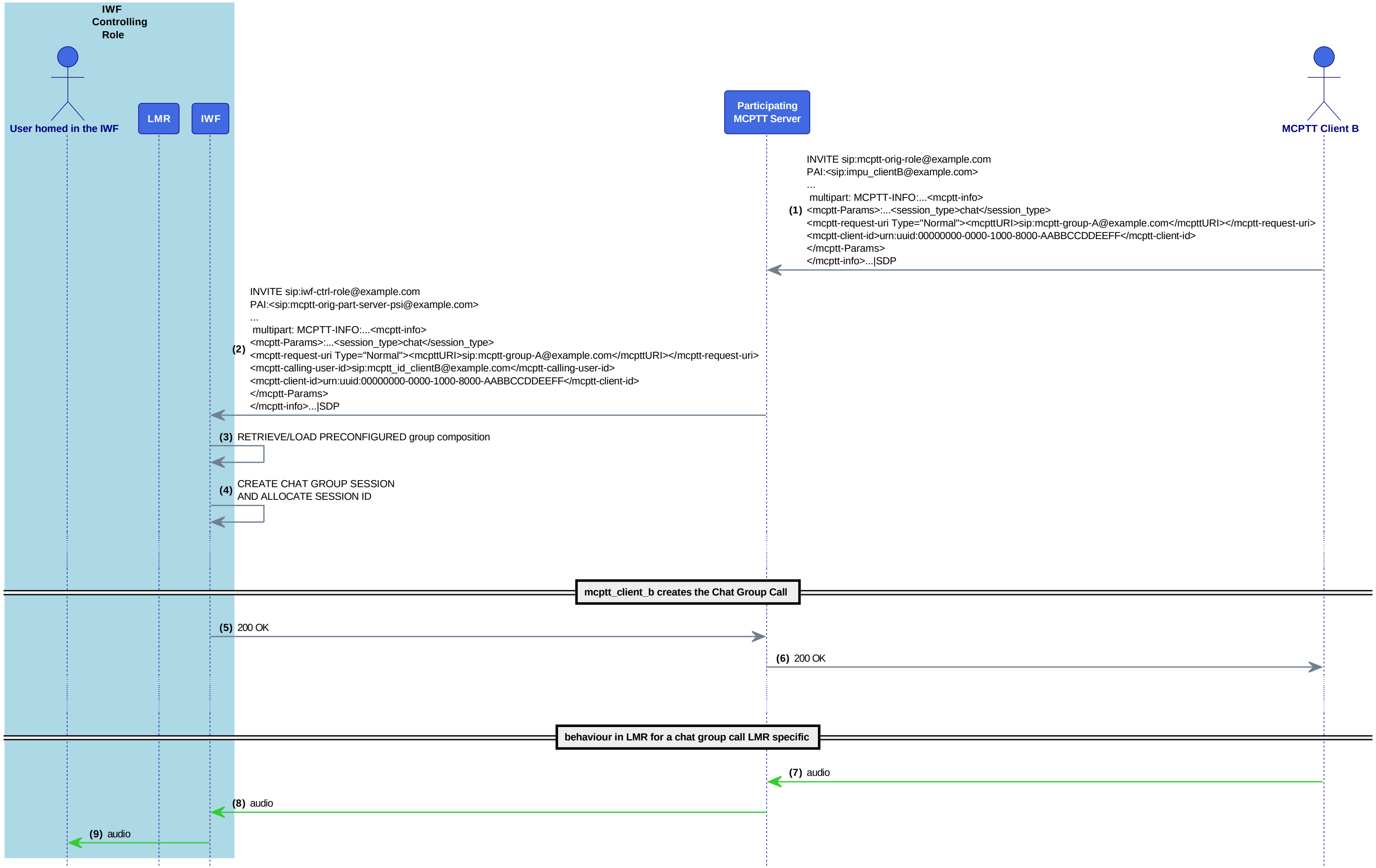

Figure 167: IWF/MCPTT/CONN/ONN/CTRL/GROUP/CHAT/ONDEM/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 181: IWF/MCPTT/CONN/ONN/CTRL/GROUP/CHAT/ONDEM/NFC/01

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/CTRL/GROUP/CHAT/ONDEM/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, MCPTT user triggering a chat group call towards an IWF in controlling role owning the group		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_CTRL • IWF-MCPTT-Ctrl_ONN-MCPTT-CALL • IWF-MCPTT-Ctrl_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT triggers a chat group call for a group owned by the IWF in a controlling role
	2	check	Resulting INVITE is forwarded by the participating server serving the user to the IWF owning the group
	3	check	LMR user joins the chat group call in a LMR specific way (out of the scope of the Plugtests)
	4	verify	Call connected and multiple media flows exchanged from the LMR and MCPTT user(s) that have joined the chat group call
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.18 IWF in controlling role receives the request to join an MCPTT chat session [IWF/MCPTT/CONN/ONN/CTRL/GROUP/CHAT/ONDEM/NFC/02]

This test comprises the IWF in controlling role owning a chat group receives the request from a MCPTT user joining the ongoing chat group call when the IWF plays the controlling role.

Similarly to [IWF/MCPTT/CONN/ONN/CTRL/GROUP/CHAT/ONDEM/NFC/01] th resulting SIP INVITE from the MCPTT client is forwarded by the participating to the IWF on a controlling role. The IWF, following clause 10.2.3.1.1 in ETSI TS 129 379 [48], processes the incoming SIP INVITE, checks <mcptt-calling-user-id> and <mcptt-request-uri> with the chat group identity, verifies there is an ongoing chat group call and returns a 200 OK with the Contact containg the Session ID of the chat group call.

Once the MCPTT user joining the chat group call receives the 200 OK the all LMR and MCPTT users exchange media.

Message Sequence Diagram

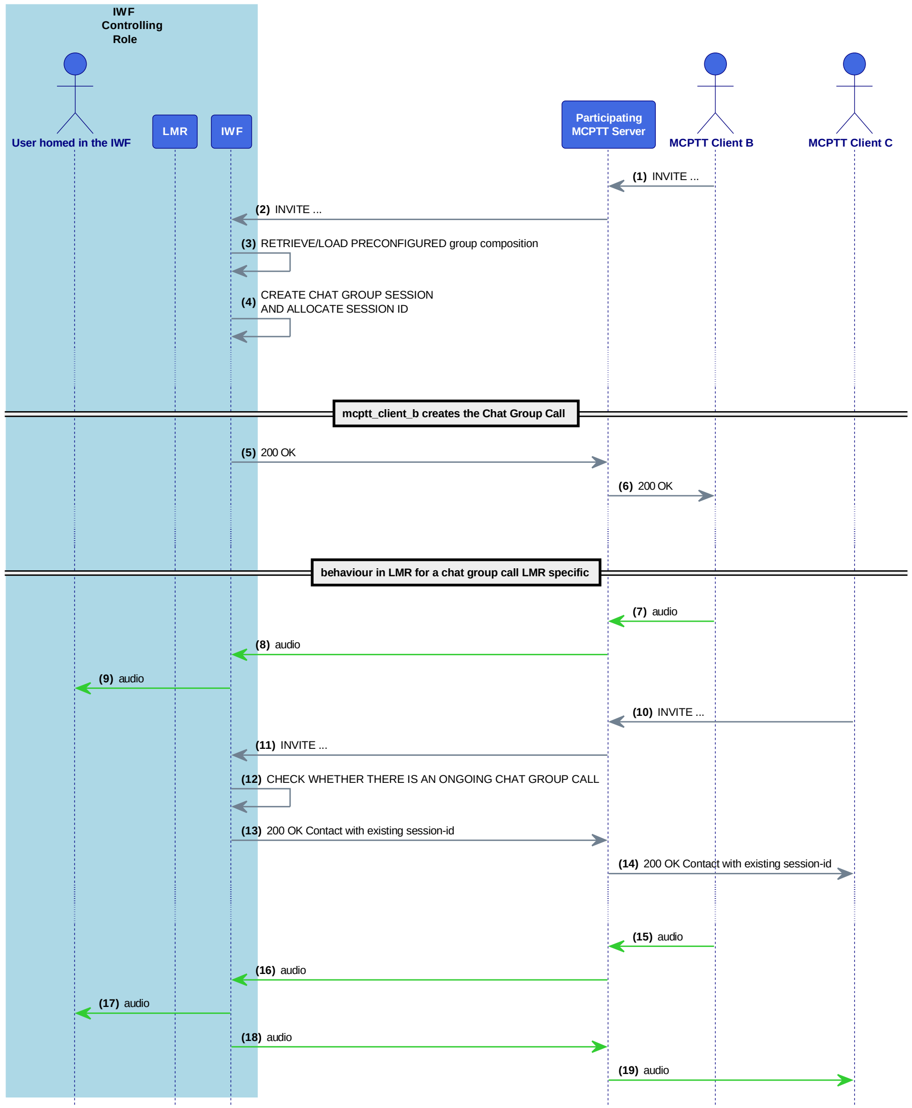

Figure 168: IWF/MCPTT/CONN/ONN/CTRL/GROUP/CHAT/ONDEM/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 182: IWF/MCPTT/CONN/ONN/CTRL/GROUP/CHAT/ONDEM/NFC/02

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/CTRL/GROUP/CHAT/ONDEM/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, MCPTT user joining an ongoing chat group call served by an IWF in controlling role		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_CTRL • IWF-MCPTT-Ctrl_ONN-MCPTT-CALL • IWF-MCPTT-Ctrl_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id • Ongoing chat group call		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT triggers on demand prearranged group call for a group owned by the IWF in a controlling role
	2	check	Resulting INVITE is forwarded by the participating server serving the user to the IWF owning the group
	3	check	LMR user joins the chat group call in a LMR specific way (out of the scope of the Plugtests)
	4	verify	Call connected and multiple media flows exchanged from the LMR and MCPTT user(s) that have joined the chat group call
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.19 IWF in controlling role originates an on demand MCPTT private call in automatic commencement mode with floor control on behalf of an LMR user [IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WFC/NFC/01]

This test covers the Automatic commencement mode of a private call with floor control from a LMR user to a MCX user, whereby the IWF has a controlling role. The procedure is described in clause 11.1.3.1 (for Private Call) and clause 6.2.1 (for Automatic commencement mode) in ETSI TS 129 379 [48].

Therefore, the IWF performing the controlling role will generate a SIP INVITE request as specified in clause 6.6.3.1.1 with the <mcptt-calling-user-id> element set to the calling user's MCPTT ID and the <mcptt-request-uri> set to MCPTT ID of the called MCPTT user (all elements in the application/vnd.3gpp.mcptt-info+xml MIME body). It will set the Request-URI to the public service identity of the terminating participating MCPTT function associated to the MCPTT user to be invited (how the IWF performing the controlling role finds the address of the terminating MCPTT participating function is out of scope) and send the SIP INVITE request towards the core network.

Upon receiving SIP 200 (OK) response for the SIP INVITE request the IWF performing the controlling role shall cache the contact received in the Contact header field; and interact with the media plane as specified in ETSI TS 129 380 [49].

Message Sequence Diagram

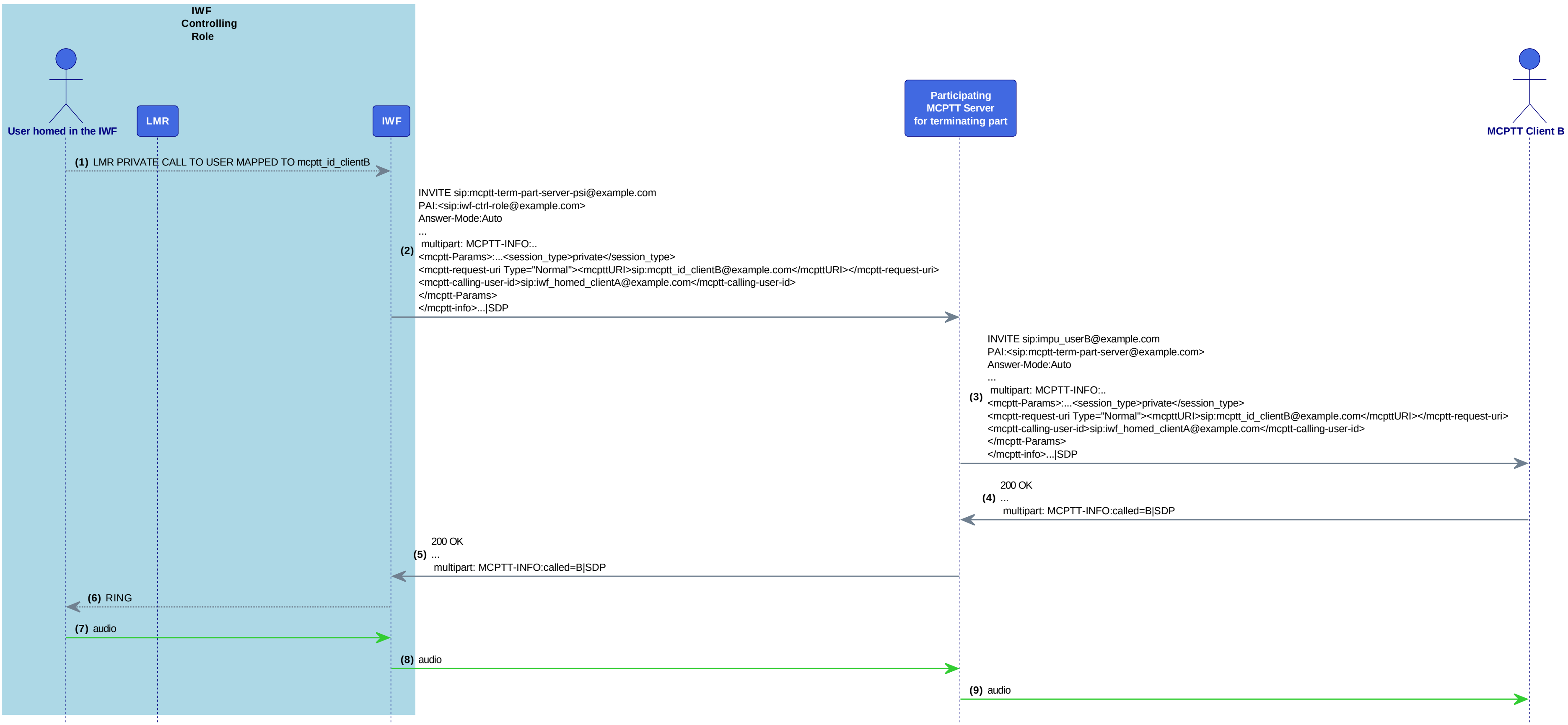

Figure 169: IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WFC/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 183: IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WFC/NFC/01

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WFC/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, LMR user triggering a private call to a MCPTT user in automatic commencement mode with the IWF on the controlling role		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_PART • IWF-MCPTT-Part_ONN-MCPTT-CALL • IWF-MCPTT-Part_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	LMR user triggers a private call towards a user mapped to a mcptt_id (i.e. mpctt_id_clientB)
	2	check	Resulting INVITE is generated in the IWF on a controlling role providing the private calling function to the LMR user
	3	check	The IWF forwards it to the terminating participating
	4	check	MCPTT client receives the INVITE, send a notification to the user (i.e. rings) and sends back a 200 OK
	5	verify	Call connected and private call between LMR and MCPTT user stablished
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.20 IWF in controlling role originates an on demand MCPTT private call in manual commencement mode with floor control on behalf of an LMR user [IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WFC/NFC/01]

This test covers the Manual commencement mode of a private call with floor control from a LMR user to a MCX user, whereby the IWF has a controlling role. The procedure is described in clause 11.1.3.1 (for Private Call) and clause 6.2.2 (for Manual commencement mode) in ETSI TS 129 379 [48].

Resulting diagram is equivalent to [IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WFC/NFC/01] but adding the handling of 180 RINGING in the IWF (how that is notified to the LMR user is LMR specific).

Message Sequence Diagram

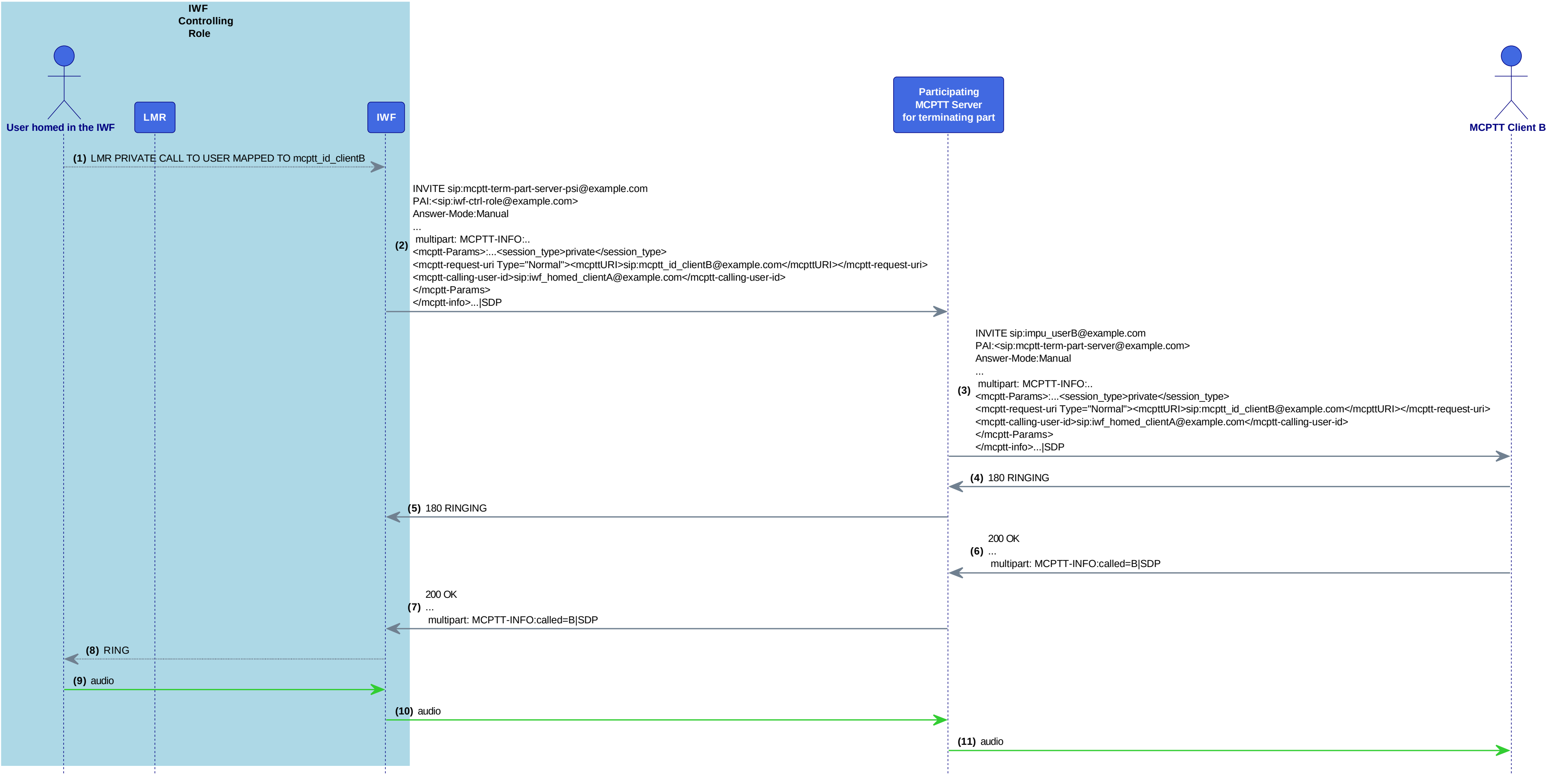

Figure 170: IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WFC/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 184: IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WFC/NFC/01

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WFC/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, LMR user triggering a private call to a MCPTT user in manual commencement mode with the IWF on the controlling role		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_CTRL • IWF-MCPTT-Ctrl_ONN-MCPTT-CALL • IWF-MCPTT-Ctrl_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	LMR user triggers a private call towards a user mapped to a mcptt_id (i.e. mpctt_id_clientB)
	2	check	Resulting INVITE is generated in the IWF on a controlling role providing the private calling function to the LMR user
	3	check	The IWF forwards it to the terminating participating
	4	check	MCPTT client receives the INVITE, send a notification to the user (i.e. rings) and sends back a 180 ringing
	5	check	Upon user taking the call a 200 ok is generated and forwarded back to the IWF
	6	verify	Call connected and private call between LMR and MCPTT user stablished
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.21 IWF in controlling role originates an on demand MCPTT private call in automatic commencement mode without floor control on behalf of an LMR user [IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WOFC/NFC/01]

This test case is equivalent to [IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WFC/NFC/01] but with no media-level section for the media floor control entity in the exchanged SDPs.

Message Sequence Diagram

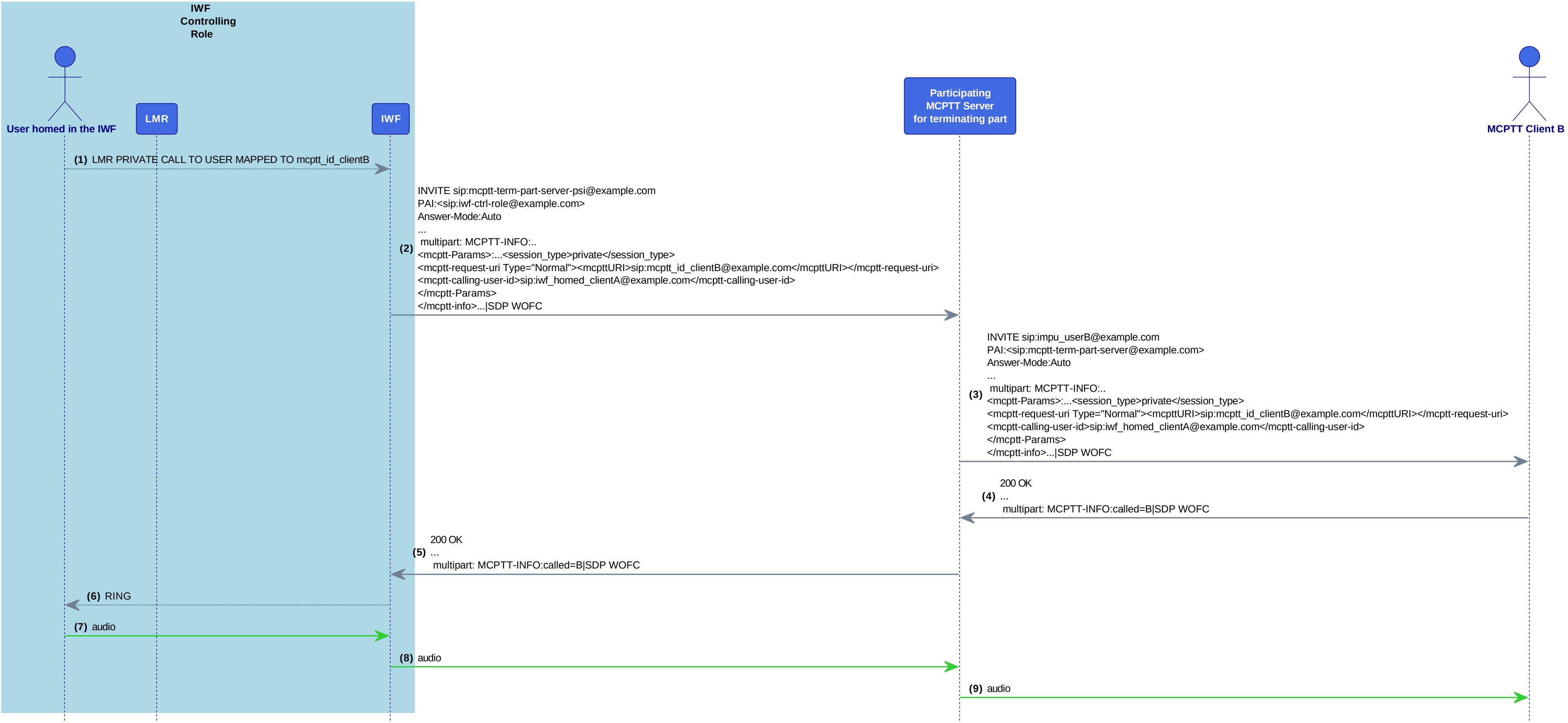

Figure 171: IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WOFC/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 185: IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WOFC/NFC/01

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WOFC/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, LMR user triggering a private call without floor control to a MCPTT user in automatic commencement mode with the IWF on the controlling role		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_CTRL • IWF-MCPTT-Ctrl_ONN-MCPTT-CALL • IWF-MCPTT-Ctrl_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	LMR user triggers a private call without floor control towards a user mapped to a mcptt_id (i.e. mpctt_id_clientB)
	2	check	Resulting INVITE is generated in the IWF on a controlling role providing the private calling function to the LMR user. The SDP lacks the floor control related media level section
	3	check	The IWF forwards it to the terminating participating
	4	check	MCPTT client receives the INVITE, send a notification to the user (i.e. rings) and sends back a 200 OK
	5	verify	Call connected and private call between LMR and MCPTT user stablished
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.22 IWF in controlling role originates an on demand MCPTT private call in manual commencement mode without floor control on behalf of an LMR user [IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WFC/NFC/01]

This test case is equivalent to [IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WFC/NFC/01] but with no media-level section for the media floor control entity in the exchanged SDPs.

Message Sequence Diagram

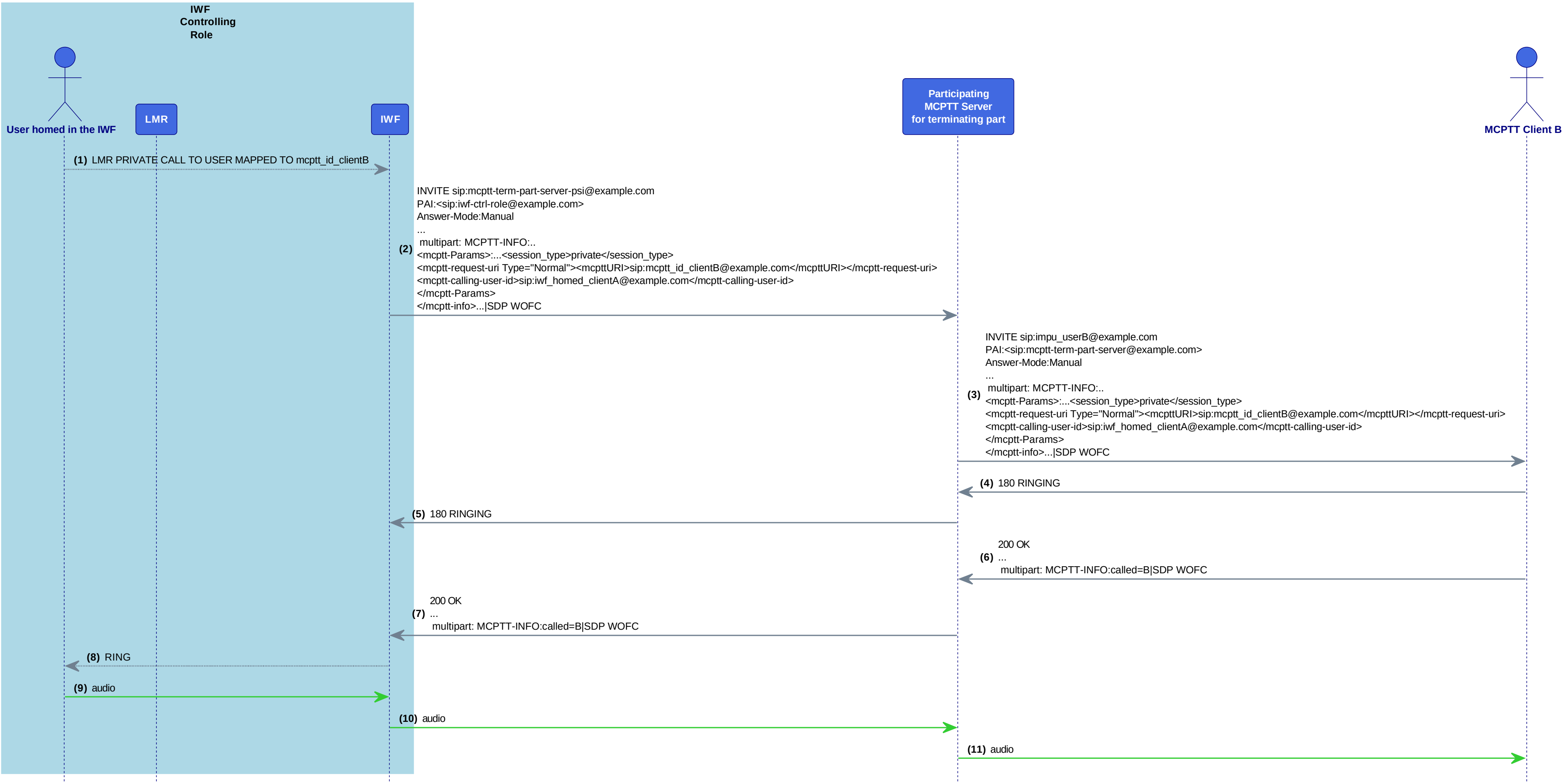

Figure 172: IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WOFC/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 186: IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WOFC/NFC/01

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WOFC/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, LMR user triggering a private call without floor control to a MCPTT user in manual commencement mode with the IWF on the controlling role		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_CTRL • IWF-MCPTT-Ctrl_ONN-MCPTT-CALL • IWF-MCPTT-Ctrl_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	LMR user triggers a private call without floor control towards a user mapped to a mcptt_id (i.e. mpctt_id_clientB)
	2	check	Resulting INVITE is generated in the IWF on a controlling role providing the private calling function to the LMR user. The SDP lacks the floor control related media level section.
	3	check	The IWF forwards it to the terminating participating
	4	check	MCPTT client receives the INVITE, send a notification to the user (i.e. rings) and sends back a 180 ringing
	5	check	Upon user taking the call a 200 ok is generated and forwarded back to the IWF
	6	verify	Call connected and private call between LMR and MCPTT user stablished
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.23 IWF in controlling role receives the request to establish an on demand MCPTT private call in automatic commencement mode with floor control targeting a user homed in the IWF [IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WFC/NFC/02]

This test covers the Automatic commencement mode of a private call with floor control from a MCPTT user to a LMR user homed in an IWF on a controlling role. The procedure is described in clause 11.1.3.2 (for Private Call) and clause 6.2.1 (for Automatic commencement mode) in ETSI TS 129 379 [48].

Therefore, the IWF performing the controlling role, upon receiving "SIP INVITE request for controlling MCPTT function of a private call" with <session-type> set to "private", shall verify the MCPTT ID of the inviting MCPTT user in the <mcptt-calling-user-id> element an process the application/resource-lists MIME body (note that no emergency, imminent peril and alert indications are considered).

The IWF on controlling mode shall then allocate an MCPTT session identity for the MCPTT session and set up a private call with the targeted user homed in the IWF (the user whose MCPTT ID is listed in the MIME resource-lists body of received SIP INVITE request). Note that how the IWF sets up calls internally is out of.

Upon deciding to accept the call, the IWF performing the controlling role shall generate a SIP 200 (OK) response to the SIP INVITE request as specified in the ETSI TS 124 379 [9] clause 6.3.3.2.3.2, with the IWF acting as the MCPTT controlling function that includes an SDP answer to the SDP offer in the incoming SIP INVITE request and shall interact with the media plane as specified in ETSI TS 129 380 [49].

Message Sequence Diagram

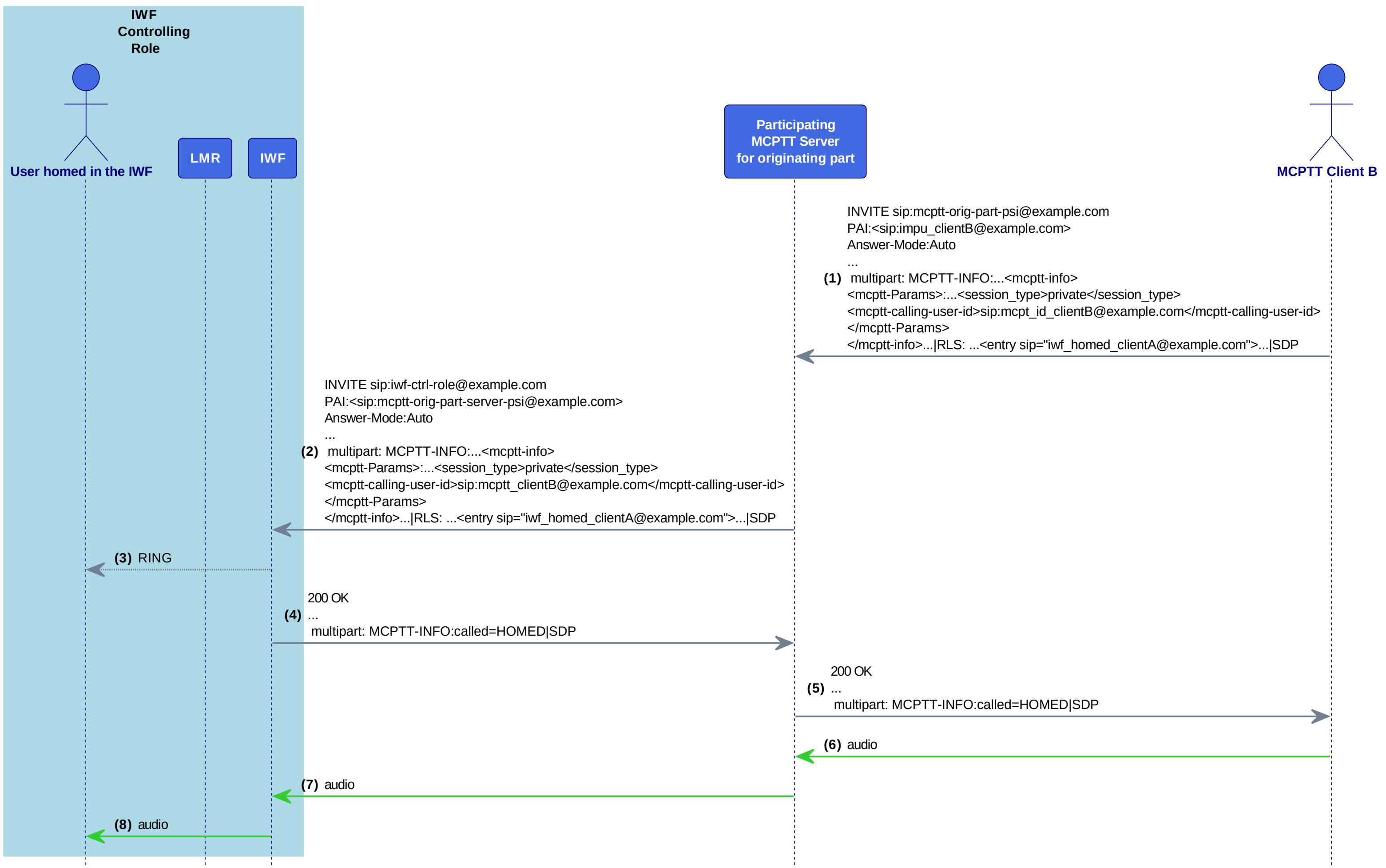

Figure 173: IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WFC/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 187: IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WFC/NFC/02

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WFC/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, MCPTT user triggering a private call to a LMR user in automatic commencement mode with the IWF on the controlling role		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_CTRL • IWF-MCPTT-Ctrl_ONN-MCPTT-CALL • IWF-MCPTT-Ctrl_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT user triggers a private call towards a LMR user (iwf_homed_userB) in automatic commencement mode
	2	check	Resulting INVITE is forwarded from the originating participanting server to the IWF on a controlling role
	3	check	Upon receiving the incoming INVITE, the IWF sends a notification to the user (i.e. rings) and sends back a 200 OK
	4	verify	Call connected and private call between MCPTT and LMR user stablished
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.24 IWF in controlling role receives the request to establish an on demand MCPTT private call in manual commencement mode with floor control targeting a user homed in the IWF [IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WFC/NFC/02]

This test covers the Automatic commencement mode of a private call with floor control from a MCPTT user to a LMR user homed in an IWF on a controlling role. The procedure is described in clause 11.1.3.2 (for Private Call) and clause 6.2.2 (for Manual commencement mode) in ETSI TS 129 379 [48].

Resulting diagram is equivalent to [IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WFC/NFC/01] but adding the handling of 180 RINGING in the IWF (how that is notified to the LMR user is LMR specific).

Message Sequence Diagram

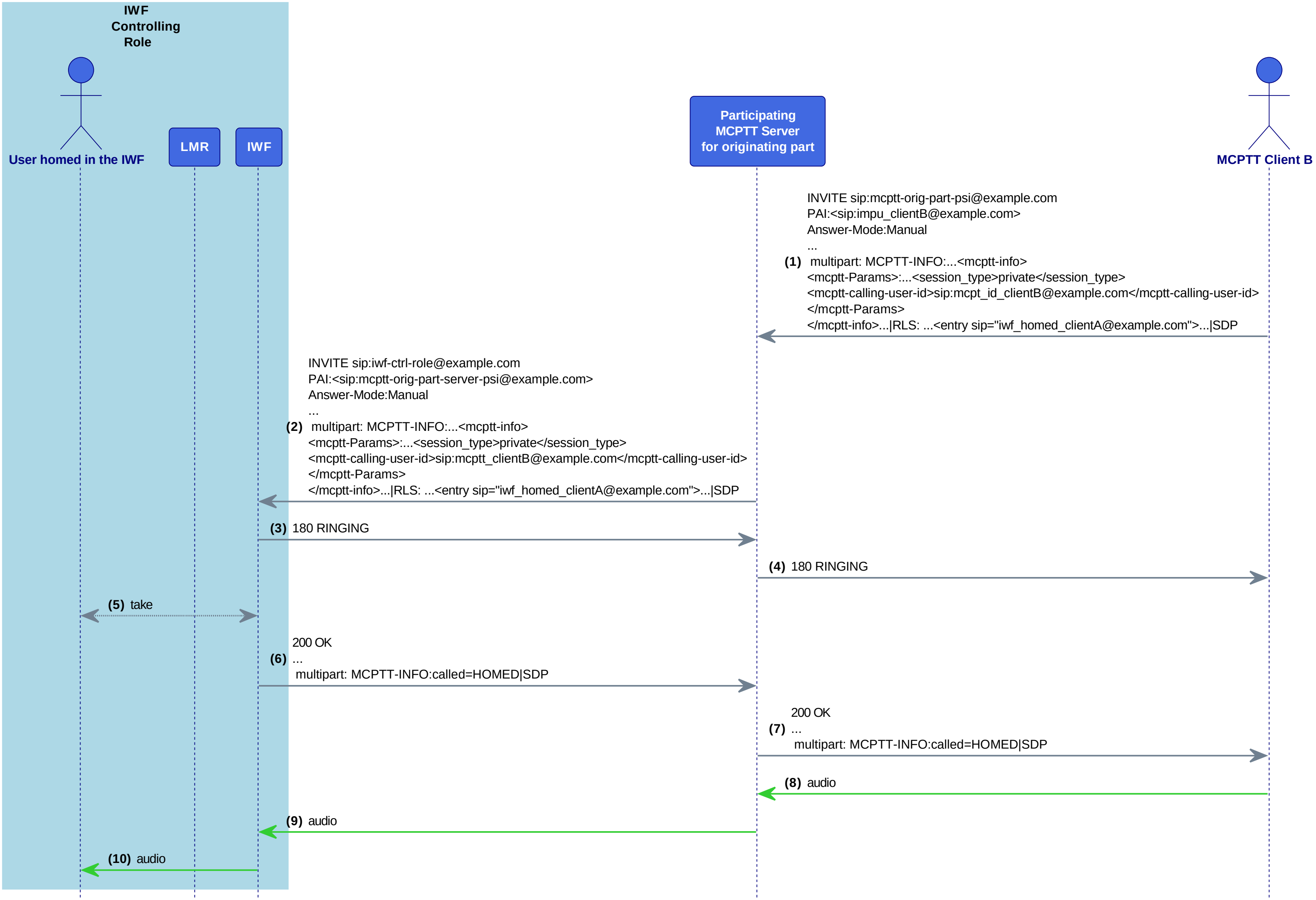

Figure 174: IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WFC/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 188: IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WFC/NFC/02

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WFC/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, MCPTT user triggering a private call to a LMR user in manual commencement mode with the IWF on the controlling role		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_CTRL • IWF-MCPTT-Ctrl_ONN-MCPTT-CALL • IWF-MCPTT-Ctrl_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT user triggers a private call towards a LMR user (iwf_homed_userB) in manual commencement mode
	2	check	Resulting INVITE is forwarded from the originating participanting server to the IWF on a controlling role
	3	check	Upon receiving the incoming INVITE, the IWF sends a notification to the user (i.e. rings) and sends back a 180 OK and notifies the LMR user
	4	check	The IWF sends back a 200 OK once the LMR has taken the call
	4	verify	Call connected and private call between MCPTT and LRM user stablished
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.25 IWF in controlling role receives the request to establish an on demand MCPTT private call in automatic commencement mode without floor control targeting a user homed in the IWF [IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WOFC/NFC/02]

This test case is equivalent to [IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WFC/NFC/02] but with no media-level section for the media floor control entity in the exchanged SDPs.

Message Sequence Diagram

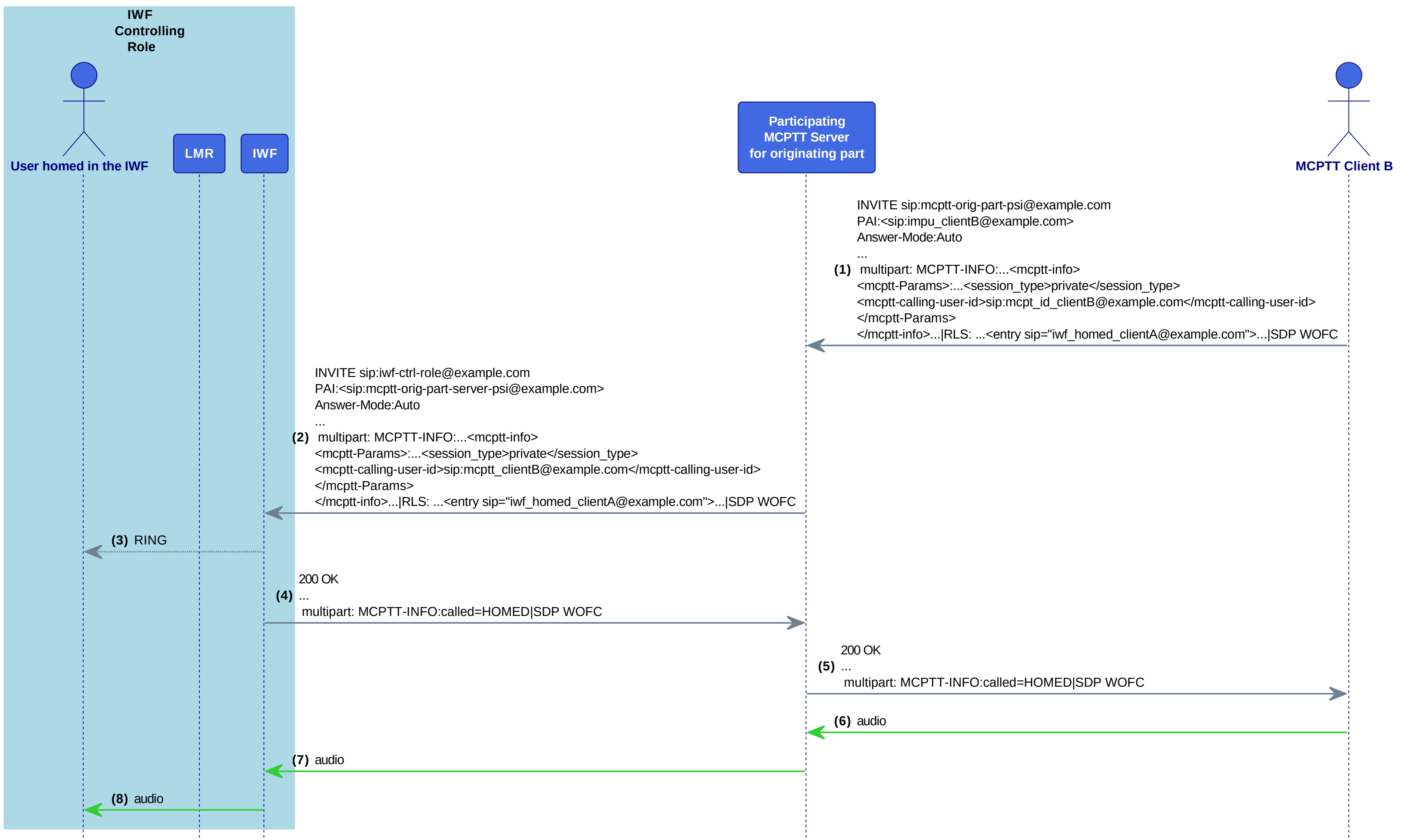

Figure 175: IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WOFC/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 189: IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WOFC/NFC/02

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/CTRL/PRIV/AUTO/ONDEM/WOFC/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, MCPTT user triggering a private call without floor control to a LMR user in automatic commencement mode with the IWF on the controlling role		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_CTRL • IWF-MCPTT-Ctrl_ONN-MCPTT-CALL • IWF-MCPTT-Ctrl_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT user triggers a private call towards a LMR user (iwf_homed_userB) in automatic commencement mode
	2	check	Resulting INVITE is forwarded from the originating participanting server to the IWF on a controlling role. The SDP lacks the floor control related media level section
	3	check	Upon receiving the incoming INVITE, the IWF sends a notification to the user (i.e. rings) and sends back a 200 OK
	4	verify	Call connected and private call between MCPTT and LRM user stablished
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.26 IWF in controlling role receives the request to establish an on demand MCPTT private call in manual commencement mode without floor control targeting a user homed in the IWF [IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WOFC/NFC/02]

This test case is equivalent to [IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WFC/NFC/02] but with no media-level section for the media floor control entity in the exchanged SDPs.

Message Sequence Diagram

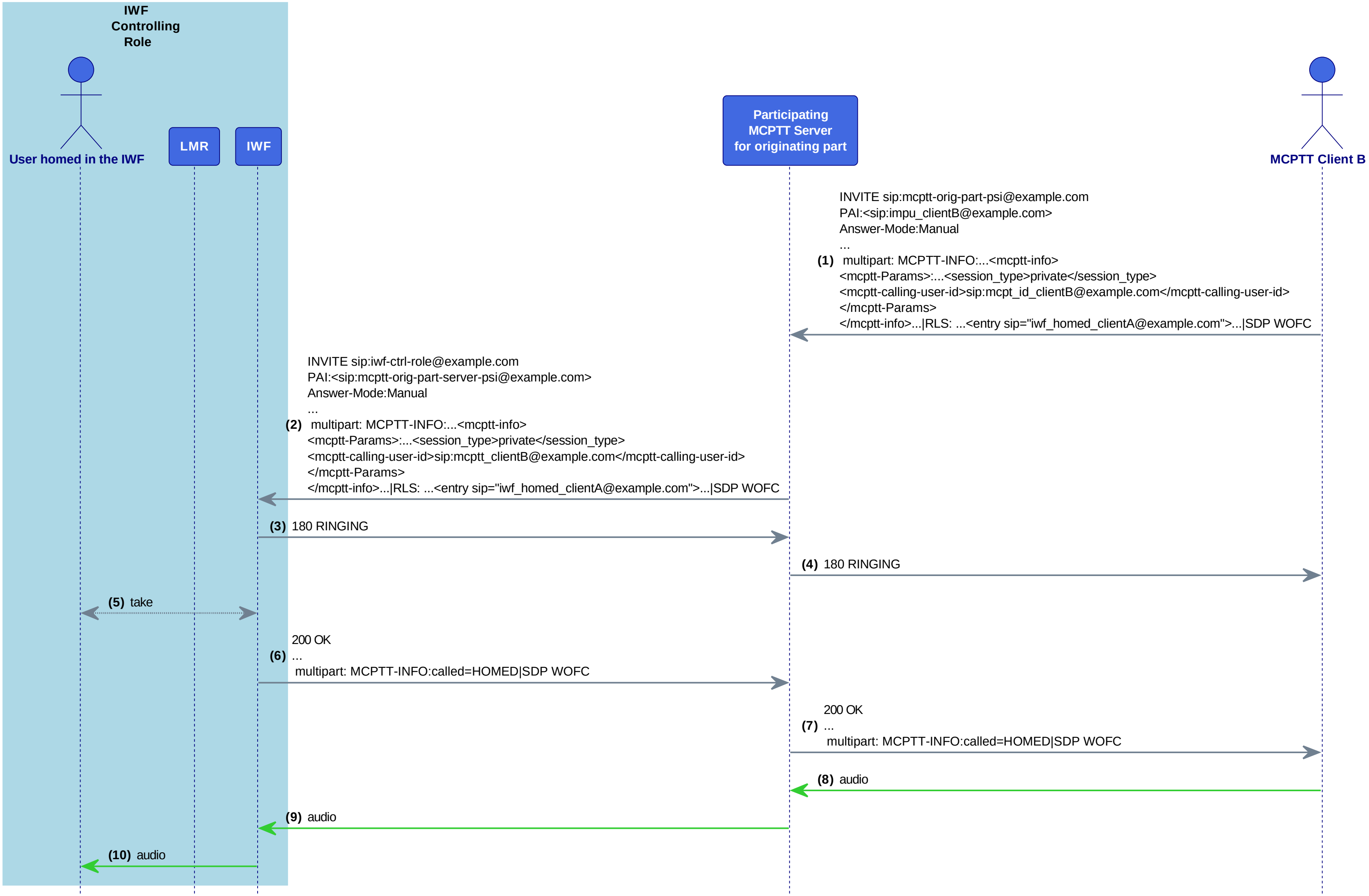

Figure 176: IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WOFC/NFC/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 190: IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WOFC/NFC/02

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/CTRL/PRIV/MANUAL/ONDEM/WOFC/NFC/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, MCPTT user triggering a private call without floor control to a LMR user in manual commencement mode with the IWF on the controlling role		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_CTRL • IWF-MCPTT-Ctrl_ONN-MCPTT-CALL • IWF-MCPTT-Ctrl_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT user triggers a private call without floor control towards a LMR user (iwf_homed_userB) in manual commencement mode
	2	check	Resulting INVITE is forwarded from the originating participanting server to the IWF on a controlling role. The SDP lacks the floor control related media level section
	3	check	Upon receiving the incoming INVITE, the IWF sends a notification to the user (i.e. rings) and sends back a 180 OK and notifies the LMR user
	4	check	The IWF sends back a 200 OK once the LMR has taken the call
	4	verify	Call connected and private call between MCPTT and LRM user stablished
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.3.27 IWF in participating role originates an on-demand prearranged MCPTT emergency group call on behalf of an LMR user [IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/03]

This test case is equivalent to [IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/01] but signalling an emergency call condition.

Therefore, the same procedure stated in clause 10.1.3.1.1 in ETSI TS 129 379 [48] will be followed but applying the specific considerations in clause 6.4.1.1. Therefore, since the MCPTT emergency state would be set, the IWF performing the participating role will include in the application/vnd.3gpp.mcptt-info+xml MIME body in the SIP INVITE request, an <emergency-ind> element set to "true" and if the MCPTT emergency group call state is set to "MEGC 1: emergency-gc-capable", shall set the MCPTT emergency group call state to "MEGC 2: emergency-call-requested". Furthermore, if the IWF has determined that an MCPTT emergency alert is to be sent (or not) will set the set the <alert-ind> element of the application/vnd.3gpp.mcptt-info+xml MIME body to "true" (or false) and modify the MCPTT emergency alert state accordingly (depending on the previous -existing- state).

On receiving the SIP 2xx response to the SIP INVITE request, the IWF performing the participating role shall interact with the user plane as specified in ETSI TS 129 380 [49] and may subscribe to the conference event package (not depicted in Figure 176a).

Message Sequence Diagram

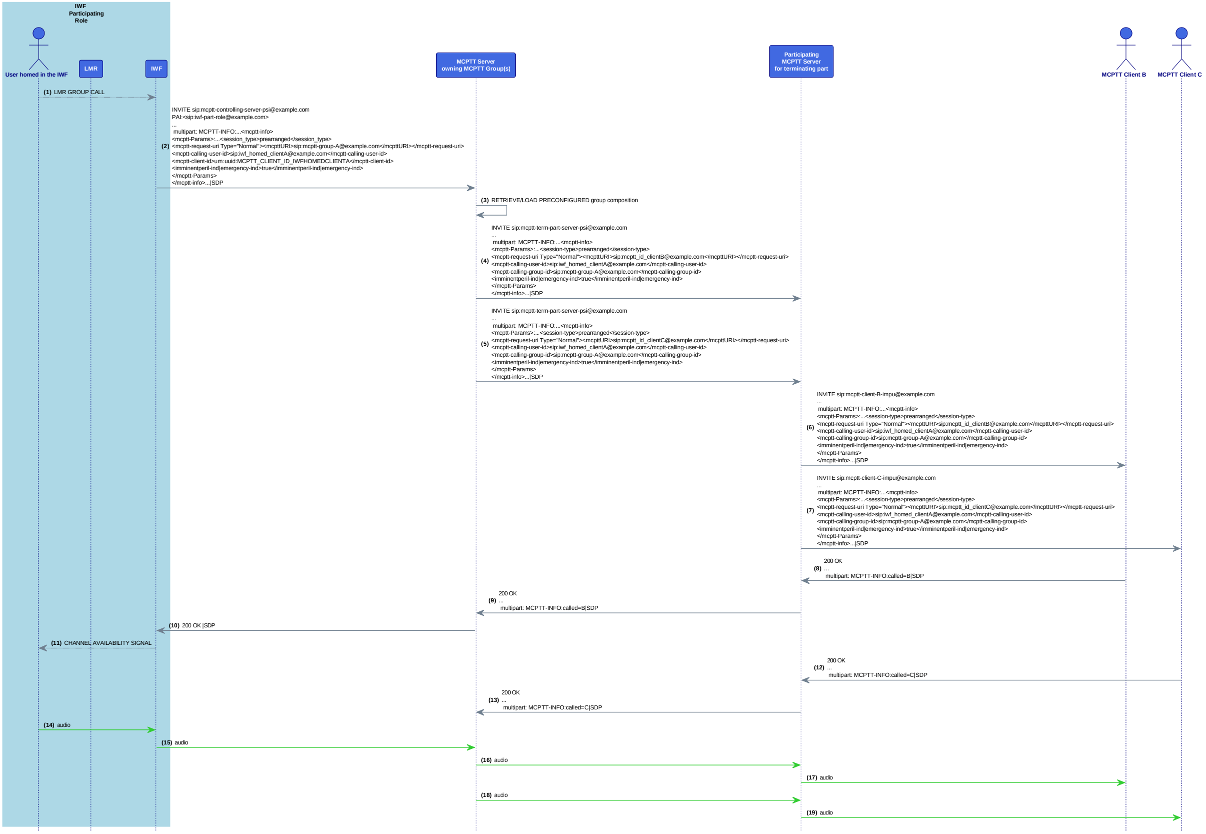

Figure 176a: IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/03 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 190a: IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/03

Interoperability Test Description			
Identifier	IWF/MCPTT/CONN/ONN/PAR/GROUP/PREA/ONDEM/NFC/03		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, and prearranged emergency group call properly stablished		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_AFFIL • IW-MCPTT_PART • IWF-MCPTT-Part_ONN-MCPTT-CALL • IWF-MCPTT-Part_MCPTT-FC • MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL (see note) • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (see note) (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	LMR user (user homed at the IWF in participating role) will initiate an emergency group call mapped to mcptt_groupA
	2	check	Resulting INVITE is sent to the PSI of the controlling server owning the MCPTT group
	3	check	The controlling server retrieves the list of group members and sends "n" INVITES to the terminating participating server(s) serving the group members
	4	check	"n" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX (where X:1..n)
	5	check	"n" INVITEs received at the affiliated mcptt_id_clientX
	6	check	"n" SIP dialogs established
	7	verify	Call connected and multiple media flows exchanged from the LMR user to those in the MCPTT side
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 9.2.2.2.11 in ETSI TS 124 379 [9].			

11.4 Interworking Security Data Messages (ISDM)

11.4.1 IWF originates Interworking Security Data message [IWF/IDSM/01]

According to clause 14.1 in ETSI TS 129 379 [48] upon deciding to send an Interworking Security Data message, the IWF shall generate a SIP MESSAGE request in accordance with ETSI TS 124 229 [6] and IETF RFC 3428 [42], including 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 shall set the Request-URI to the address of the terminating participating function associated with the MC service ID of the targeted MC service user.

The SIP Message includes a Interworking Security Data (InterSD) message payload in an application/vnd.3gpp.interworking-data MIME body according to clause 14.2.1 in ETSI TS 129 379 [48] Interworking Security Data (InterSD) message is defined as a MONP message with direction IWF to MCPTT client and external network type according to clause 14.2.2 (i.e. P25/TETRA). Later the IWF will send the SIP MESSAGE request according to rules and procedures with ETSI TS 124 229 [6].

Message Sequence Diagram

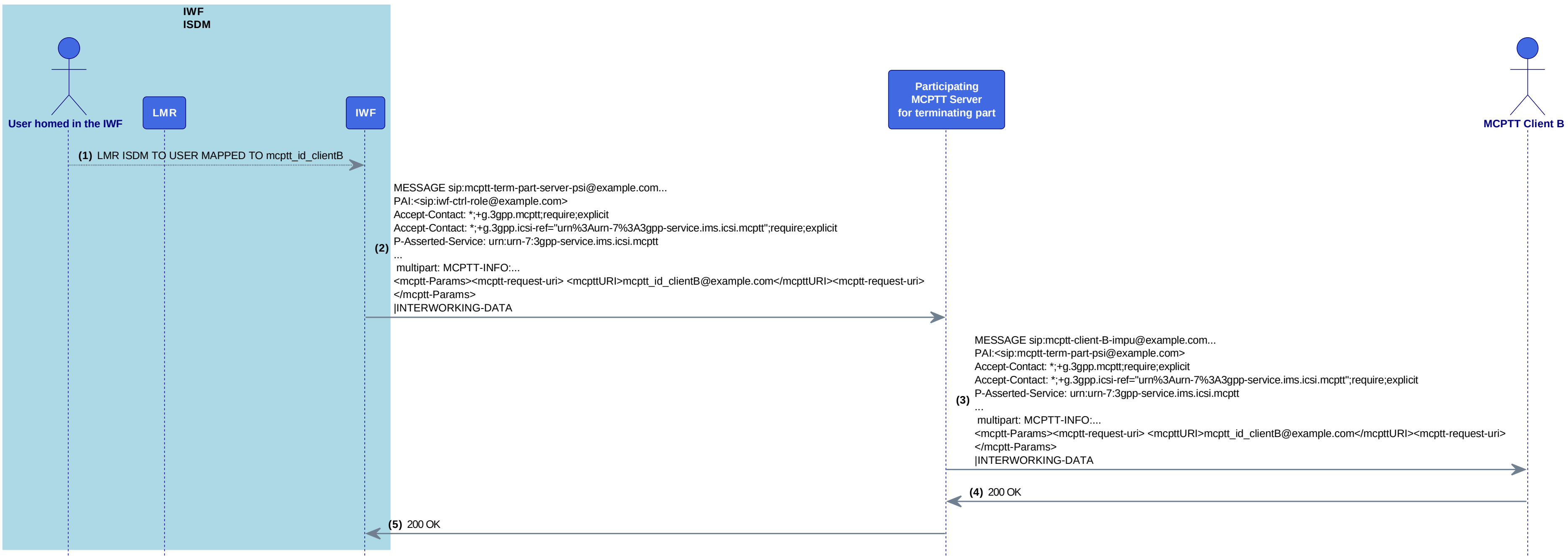

Figure 177: IWF/ISDM/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 191: IWF/ISDM/01

Interoperability Test Description			
Identifier	IWF/ISDM/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, LMR user sends a ISDM to MCPTT user		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_CTRL • IWF_ISDM • MCPTT-Client_ISDM		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	LMR user (user homed at the IWF) sends a ISDM to a MCPTT user
	2	check	Resulting SIP MESSAGE from the IWF is forwarded to the terminating participating MCPTT server
	3	check	MCPTT user receives the message and the MCPTT Client sends back a 200 OK
	4	check	200 OK is sent back to the IWF
	5	verify	ISDM received by the MCPTT user

11.4.2 IWF receives Interworking Security Data message [IWF/IDSM/02]

Clause 14.2 in ETSI TS 129 379 [48] defines that the IWF will eceive a "SIP MESSAGE request for Interworking Security Data message for participating function". However, the actions performed by the IWF are out of scope of the present document. The received message, described in clause 14.2, contains an opaque payload.

Message Sequence Diagram

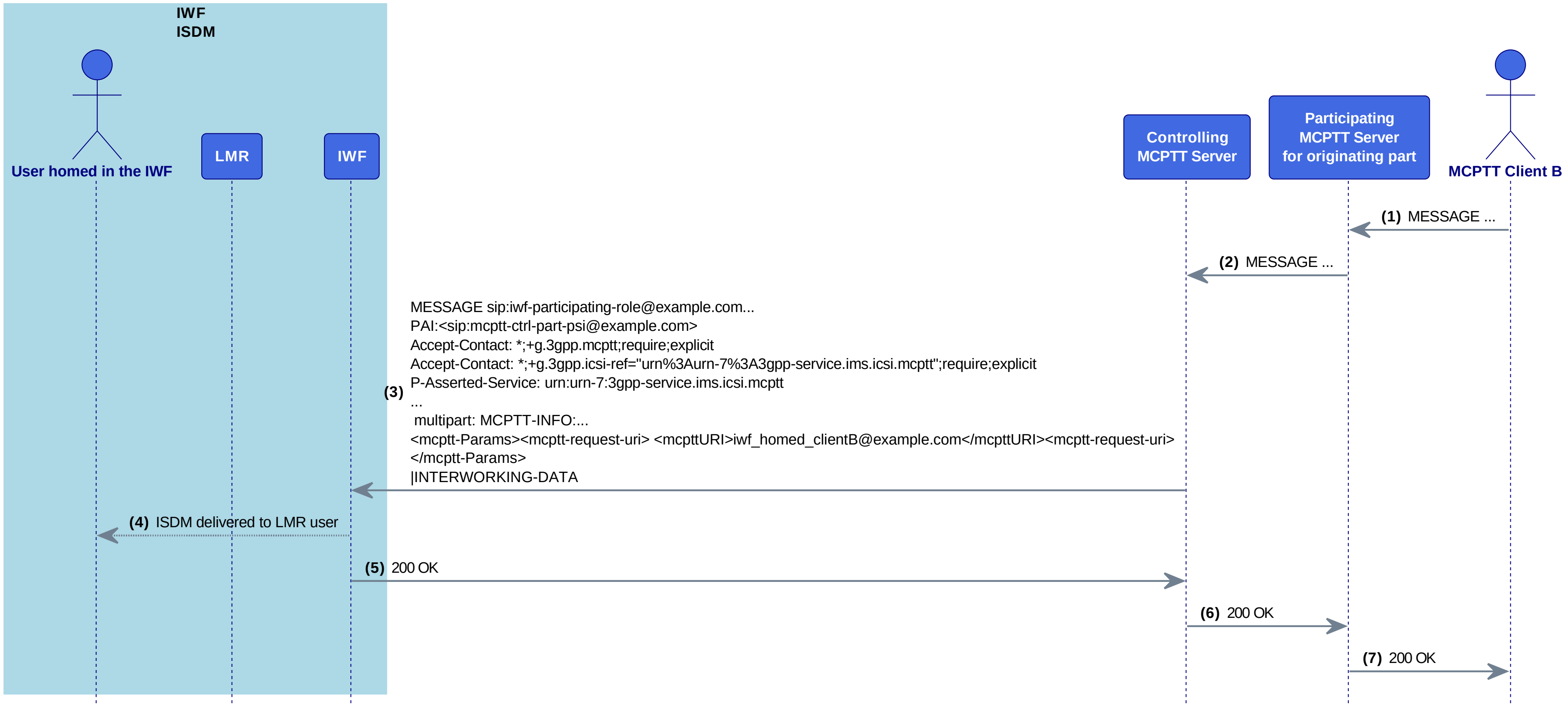

Figure 178: IWF/ISDM/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 192: IWF/ISDM/02

Interoperability Test Description			
Identifier	IWF/ISDM/02		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing and SIP signalling for LMR user, MCPTT user sends a ISDM to a LMR user homed in the IWF		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• IWF-MCPTT_PART • IWF_ISDM • MCPTT-Client_ISDM		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • Proper configuration of the SIP core/IMS to forward the signalling to the specific controlling and participating servers including the IWF in participating mode • LMR UEs and MC clients properly registered to the LMR and SIP core/IMS and MC system respectively • Static/dynamic mapping of the SIP identity (i.e. IMPU) vs. mcptt_id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	MCPTT user sends a ISDM to a LMR user homed in the IWF (iwf_homed_clientA)
	2	check	Resulting SIP MESSAGE from the user is forwarded from the originating to the controlling an from there to the IWF behaving as terminating participating
	3	check	MCPTT user receives the message and the MCPTT Client sends back a 200 OK
	4	check	200 OK is sent back to the MCPTT client
	5	verify	ISDM received by the LMR user

12 Inter-MCX (IMCX)

12.1 Common remarks

The number of possible combinations of deployments and mutual trust together with the out-of-scope local policies to be applied (specially topology hiding related ones) make it difficult to provide a comprehensive set of inter-MCX test cases.

Therefore, along the following sections the sequence diagrams and even the test purposes themselves are provided for illustrative purposes with the aim to show typical setups.

12.2 MCPTT

12.2.1 Common remarks

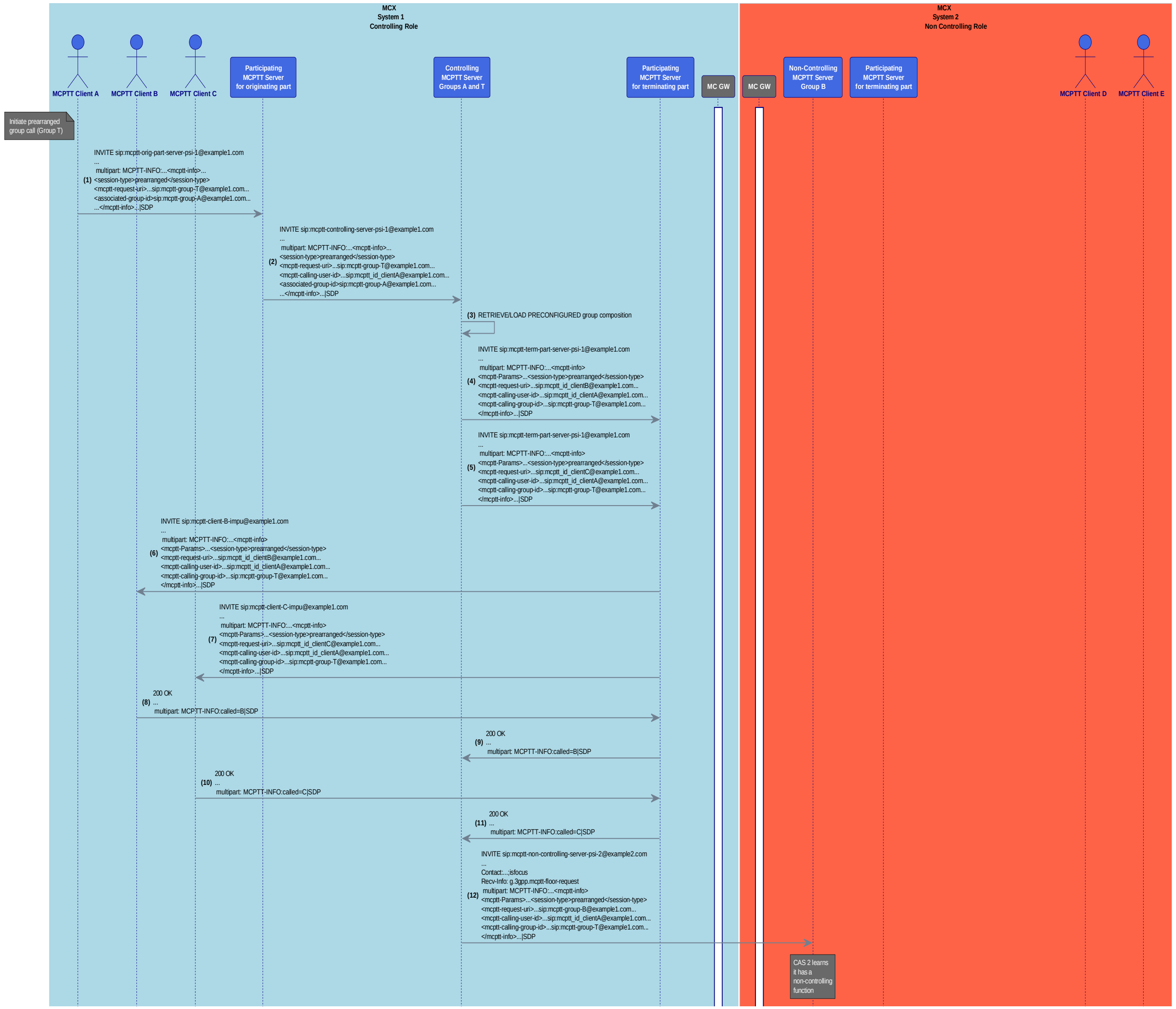
As aforementioned, the role and effect into the signalling of the MC gateway may differ depending on the local policies and trust relationships. Therefore, simple trusted and untrusted modes will be considered and the MCX-1 reference point resulting on MCPTT-3 and MCPTT-10. Note that figure 5.5.2-12 and figure 5.5.2-2 in ETSI TS 124 379 [9] show a untrusted functional connectivity model where the MC Gateway allows direct communication between the Contorlling in a system and the participating (terminating and originating respectively) in the other. However, the more complex one (using non-controlling servers) will be evaluated in this clause following the statement at the end of clause 5.5 "Other functional connectivity models for non trusted relationship exist, based on the same principle of use of MCPTT gateway servers, e.g. with non-controlling MCPTT functions." and therefore closer to figure 5.3.2-5 showing 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 for the case of untrusted mutual aid.

12.2.2 MCPTT User in an MCS system owning the temporary group initiates an on-demand prearranged MCPTT Group Call in trusted mode [IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/CTRL/TRUSTED/NFC/01]

This test case is equivalent to [S2S/ONN/GROUP/PREA/ONDEM/TEMP/02] but the primary and partner systems belong to different organizations.

Note that the possible roles of MC GW (NOT mandated in trusted mode) has been depicted in figure 179.

Message Sequence Diagram



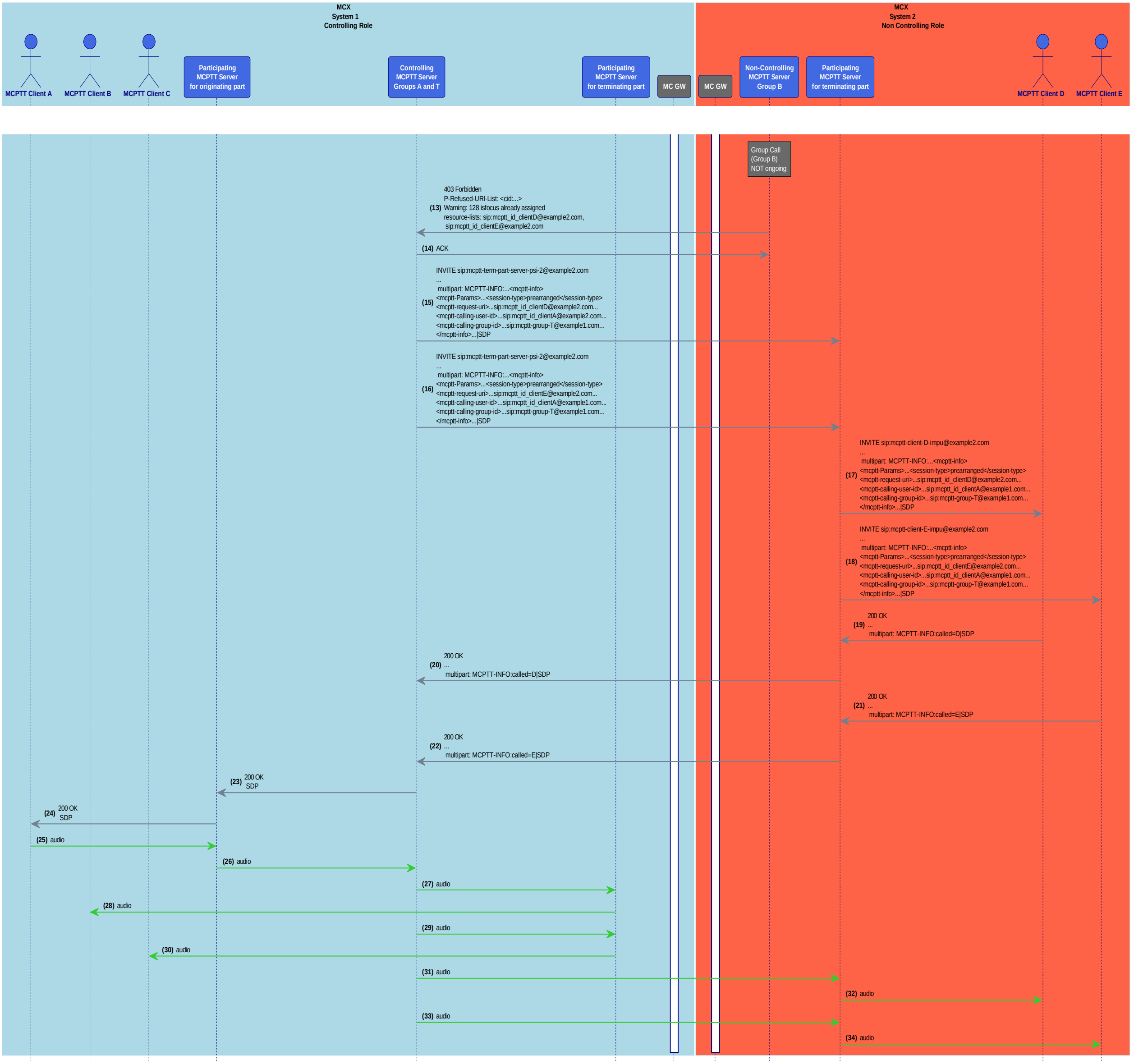


Figure 179: IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/CTRL/TRUSTED/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 193: IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/CTRL/TRUSTED/NFC/01

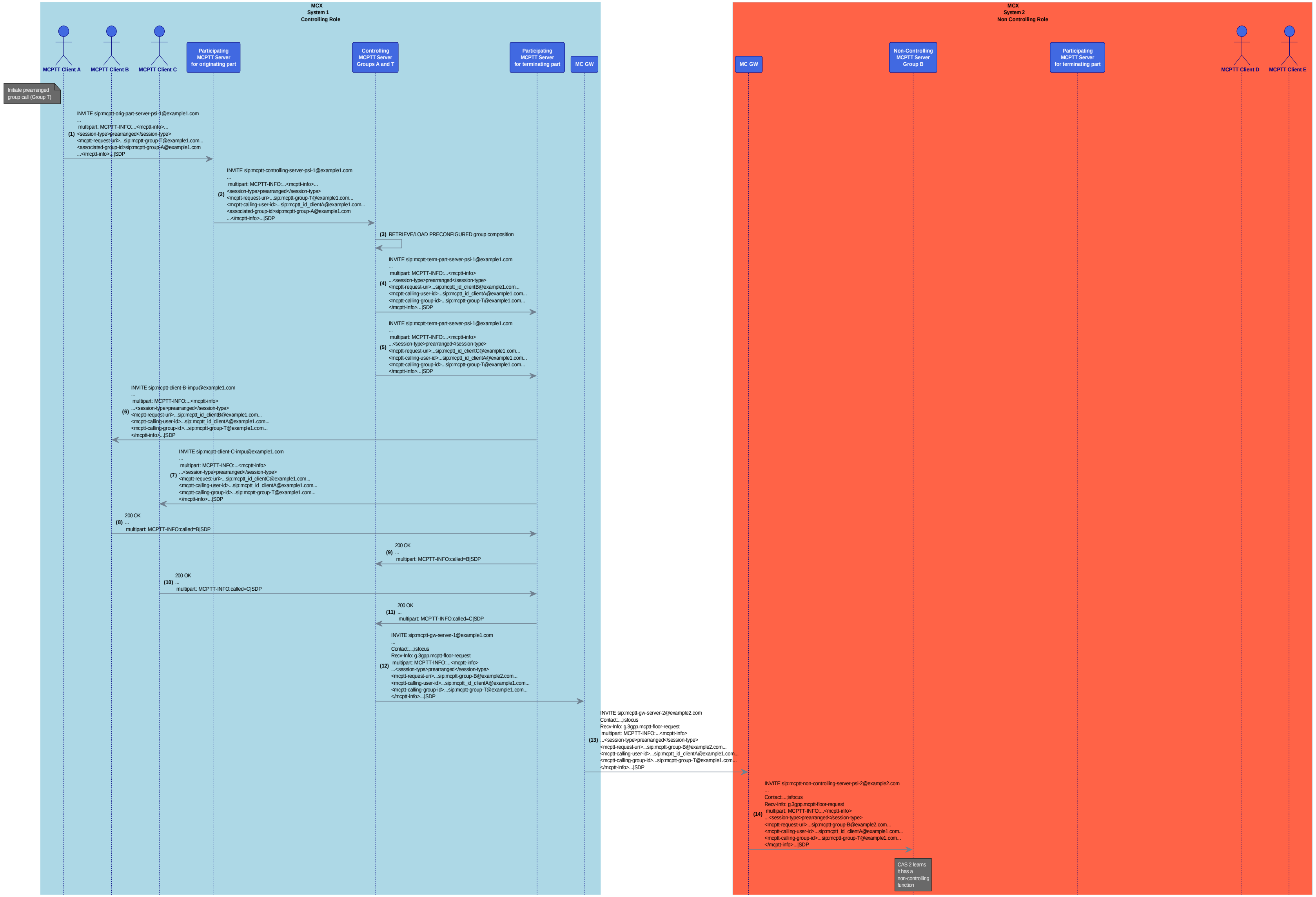
Interoperability Test Description			
Identifier	IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/CTRL/TRUSTED/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and inter-MCX signalling between controlling and non-controlling servers in two systems in a mutual-aid trusted relationship		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Group re-grouping procedure already finished for the temporary group • Calling user is affiliated to the called group • Trusted relationship exists between partner systems		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example1.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@example1.com
	3	check	INVITE received at the MCPTT controlling server in system 1
	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@example1.com (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@example2.com) throught the different MC GW (if applies)
	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@example2.com
	10	check	The controlling server creates an INVITE per each of the "m" affiliated members of mcptt-group-B@example2.com
	11	check	"m" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX
	12	check	"m" INVITEs received at mcptt_id_clientX
	13	verify	Call connected and multiple media flows exchanged between the 2 systems

12.2.3 MCPTT User in an MCS system owning the temporary group initiates an on-demand prearranged MCPTT Group Call in untrusted mode [IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/CTRL/UNTRUSTED/NFC/01]

This test case is equivalent to [S2S/ONN/GROUP/PREA/ONDEM/TEMP/02] but adding the MC GWs in the signalling path between the MCX systems.

Therefore, all the signalling in the System 1 would be the same (once the temporary group has been previously created) but according to clause 10.1.1.4.1 in ETSI TS 124 379 [9] for the case of a partner MCPTT system in a different trust domain, upon receiving the INVITE to the temporary group the controlling MCPTT function shall generate a SIP INVITE request and, instead of setting the Request-URI to the public service identity of the non-controlling MCPTT function serving the group identity of the MCPTT group owned by the partner MCPTT system, it will route the SIP request through an MCPTT gateway server that acts as an exit point from the primary MCPTT system to the partner MCPTT system.

Message Sequence Diagram



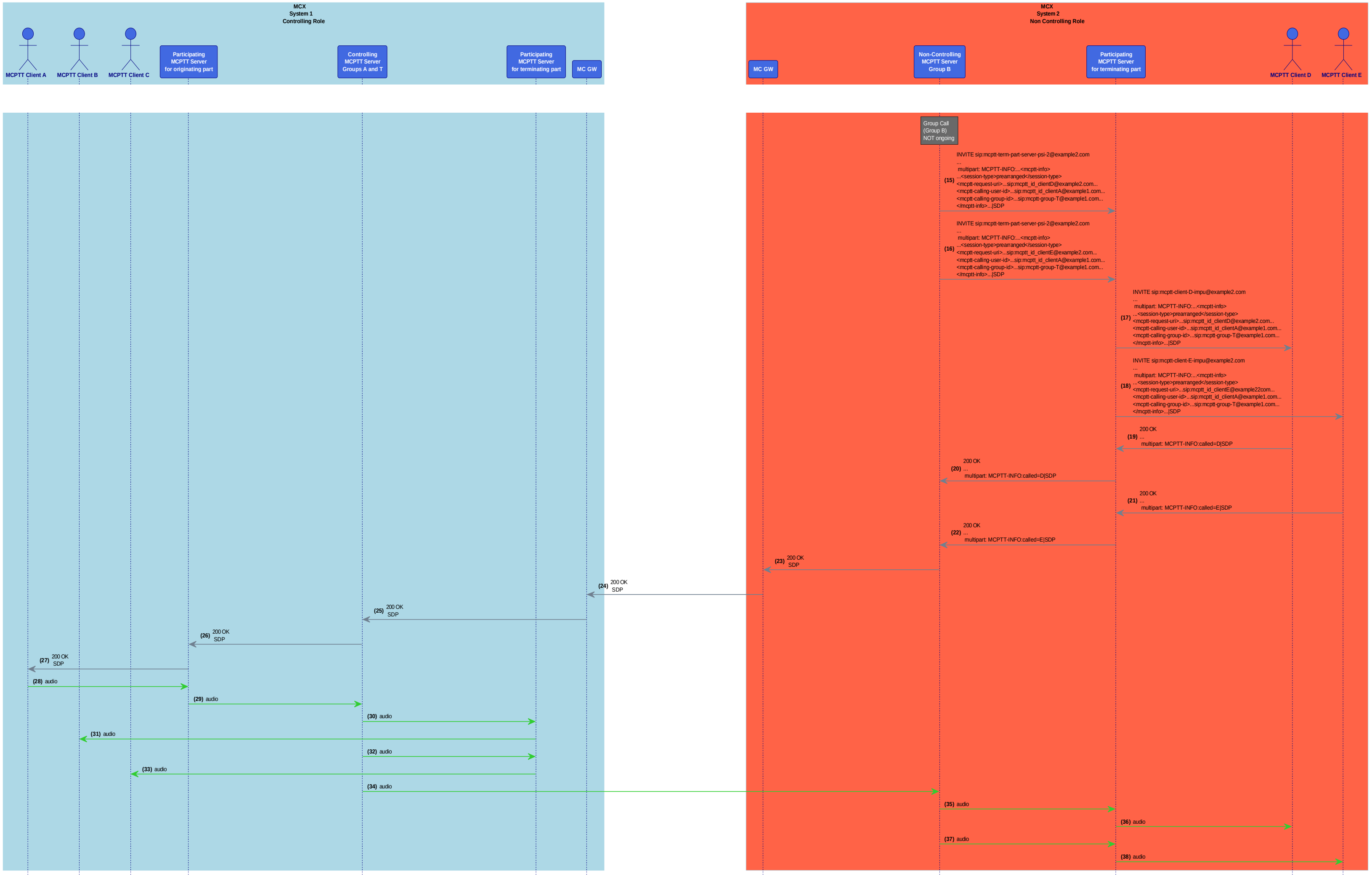


Figure 180: IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/CTRL/UNTRUSTED/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 194: IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/CTRL/UNTRUSTED/NFC/01

Interoperability Test Description			
Identifier	IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/CTRL/UNTRUSTED/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and between two systems in an untrusted mode by connecting MCPTT controlling and non-controlling servers of both systems through the MC GWs		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Group re-grouping procedure already finished for the temporary group • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example1.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@example1.com
	3	check	INVITE received at the MCPTT controlling server in system 1
	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@example1.com (one of the constituent group)
	6	check	"n" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX@example1.com
	7	check	"n" INVITEs received at mcptt_id_clientX@example1.com
	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@example2.com) through the exit and entry MC GWs
	9	check	The non-controlling server at system 2 creates an INVITE per each of the "m" affiliated members of mcptt-group-B@example2.com
	10	check	"m" INVITEs received at the MCPTT participating servers of each mcptt_id_clientX@example2.com
	11	check	"m" INVITEs received at mcptt_id_clientX
	12	verify	Call connected and multiple media flows exchanged between two systems

12.2.4 MCPTT User in an MCS system owning a constituent group initiates an on-demand prearranged MCPTT Group Call in untrusted mode [IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/NONCTRL/UNTRUSTED/NFC/01]

According to clause 10.1.1.2.1.1 in ETSI TS 124 379 [9] the MCPTT client initiates the prearranged MCPTT group call to a temporary group by including its group id in the <mcptt-request-uri> and the constituent group id in the<associated-group-id> element of the mcptt-info body in the SIP INVITE and sends it to the participating.

The originating participating in system 2 following clause 10.1.1.3.1.1 checks the group identity from the <mcptt-request-uri> to evaluate how to route the INVITE.

Since incoming SIP INVITE request contains an <associated-group-id> element, then the group identity contained in the <mcptt-request-uri> element is determined to be a TGI and the participating MCPTT function shall generate a SIP INVITE request as specified in clause 6.3.2.1.10 (namely "sending a SIP INVITE request towards the non-controlling MCPTT function").

Therefore, it will determine the public service identity of the non-controlling MCPTT function associated with the group identity of the constituent group contained in the <associated-group-id> element and copy the contents of the application/vnd.3gpp.mcptt-info+xml MIME body of the original incoming SIP INVITE request to the outgoing SIP INVITE request and set the <mcptt-calling-user-id> element of the application/vnd.3gpp.mcptt-info+xml MIME body of the SIP INVITE request to the MCPTT ID of the calling user.

The non-controlling in System 2 according to clause 10.1.1.5.5 in ETSI TS 124 379 [9] (initiating a temporary group session upon receiving a "SIP INVITE request from participating MCPTT function for non-controlling MCPTT function of an MCPTT group") shall retrieve the group document from the group management server for the MCPTT group ID contained in the <associated-group-id> element of the application/vnd.3gpp.mcptt-info+xml MIME body of the SIP INVITE request and carry out initial processing as specified in clause 6.3.5.2.

According to step 4a) since the MCPTT server is a non-controlling function of an MCPTT group, then the MCPTT server shall exit this clause and follow (leading to step 9). Therefore, the non-controlling server shall generate a SIP INVITE request towards the controlling MCPTT function as specified in clause 6.3.4.1.4; It shall set the Request-URI to the public service identity of the controlling MCPTT function based on the <mcptt-request-uri> element received in the "SIP INVITE request from participating MCPT function for non-controlling MCPTT function of an MCPTT group", the <mcptt-request-uri> element set to the identity of the TGI received in the <mcptt-request-uri> element of the received SIP INVITE, the <mcptt-calling-group-id> element set to the identity of the constituent group received in the <associatedgroup-id> element of the received SIP INVITE and the <mcptt-calling-user-id> element set to the identity of the calling user received in the <mcptt-calling-user- id> element of the received SIP INVITE; and send it.

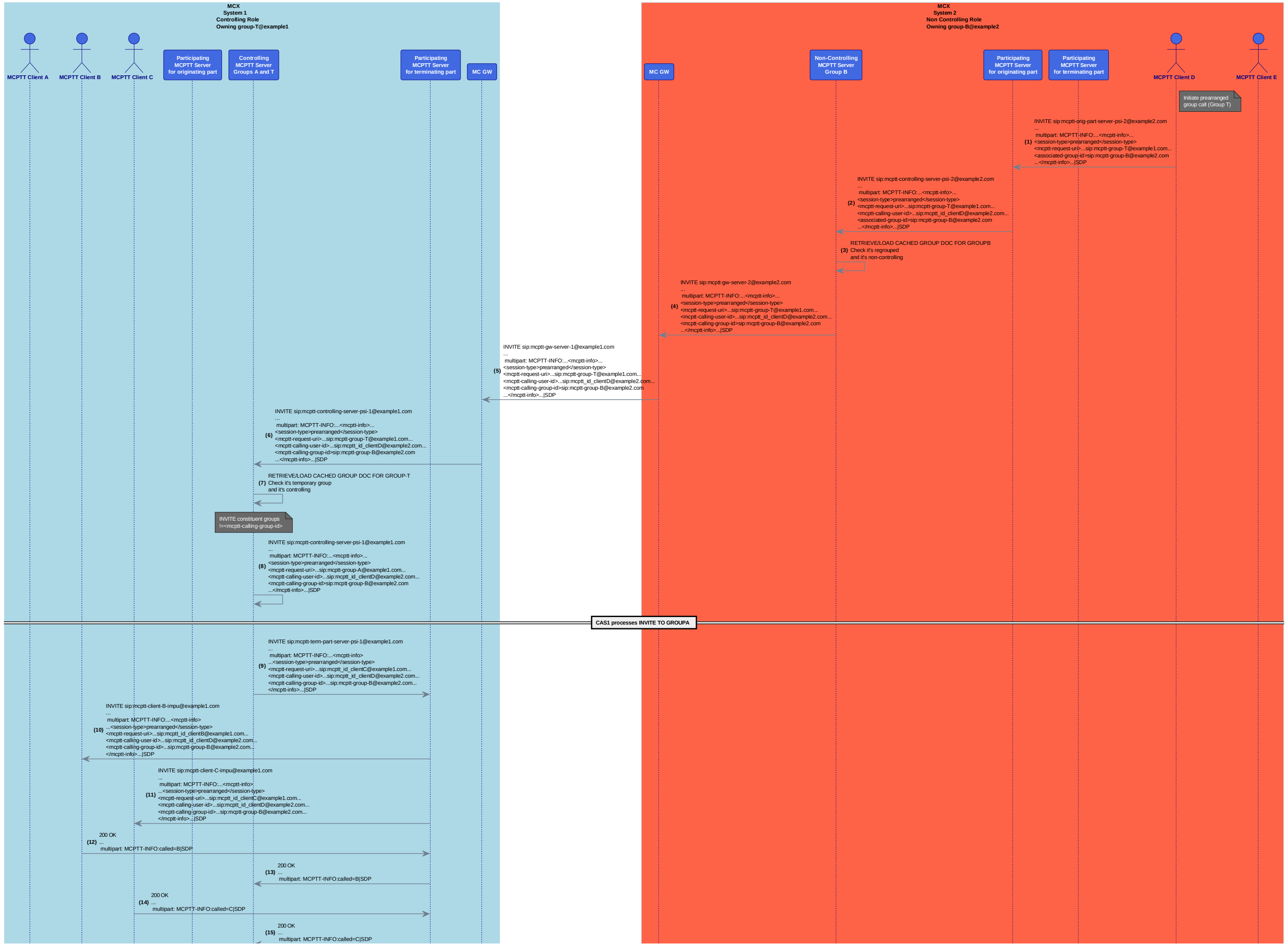
The resulting INVITE will traverse the outgoing and incoming MCPTT GWs in the inter-MCX interfaces and reach the controlling.

According to clause 10.1.1.4.2 upon receipt of a "SIP INVITE request for controlling MCPTT function of an MCPTT group", the controlling MCPTT function since the group identity is associated with a group document maintained by the GMS in this system shall retrieve the necessary group document(s) from the group management server for the group identity contained in the SIP INVITE request and carry out initial processing as specified in clause 6.3.5.2.

Therefore, according to step 4 b) i) in clause 6.3.5.2 the requesting MCPTT server is a controlling function of an MCPTT group and the MCPTT server determines the group document is for a TGI (i.e. the group document includes an <on-network-temporary> element, then the group document is associated with a TGI). Back to clause 10.1.1.4.2 step 9 the controlling shall determine if an MCPTT group call for the group identity is already ongoing by determining if an MCPTT session identity has already been allocated for the group call and the MCPTT session is active. Since the MCPTT group call is not ongoing and since the group identity in the "SIP INVITE request for controlling MCPTT function of an MCPTT group" is a TGI then (step 14 f)) it shall, for each of the constituent MCPTT groups except for the calling MCPTT group identified in the <mcptt-calling-group-id> element of the incoming SIP INVITE, generate a SIP INVITE request towards the MCPTT server that owns the constituent MCPTT group identity by following the procedures in clause 10.1.1.4.1.2 and shall send the SIP 200 (OK) response towards the inviting non-controlling MCPTT function. That will result to the controlling server (in case it owns any other constituent group) triggering incoming group calls for the constituent group.

Back in the system 2 (non controlling), upon receipt of a SIP 2xx response to the SIP INVITE request sent to the controlling MCPTT function as specified above, the non-controlling MCPTT function shall send the SIP ACK request to the controlling MCPTT function, shall generate a SIP 200 (OK) to the "SIP INVITE request for controlling MCPTT function of an MCPTT group" and include the warning text set to "148 group is regrouped" in a Warning header field as specified, shall send the SIP 200 (OK) request, start acting as a non-controlling MCPTT function and interact with the media plane as specified in ETSI TS 124 380 [10], clause 6.5, and shall finally determine the members to invite to the prearranged MCPTT group call as specified in clause 6.3.5.5 and invite each group member determined to the group session, as specified in clause 10.1.1.5.1 (therefore using 6.3.4.1.2).

Message Sequence Diagram



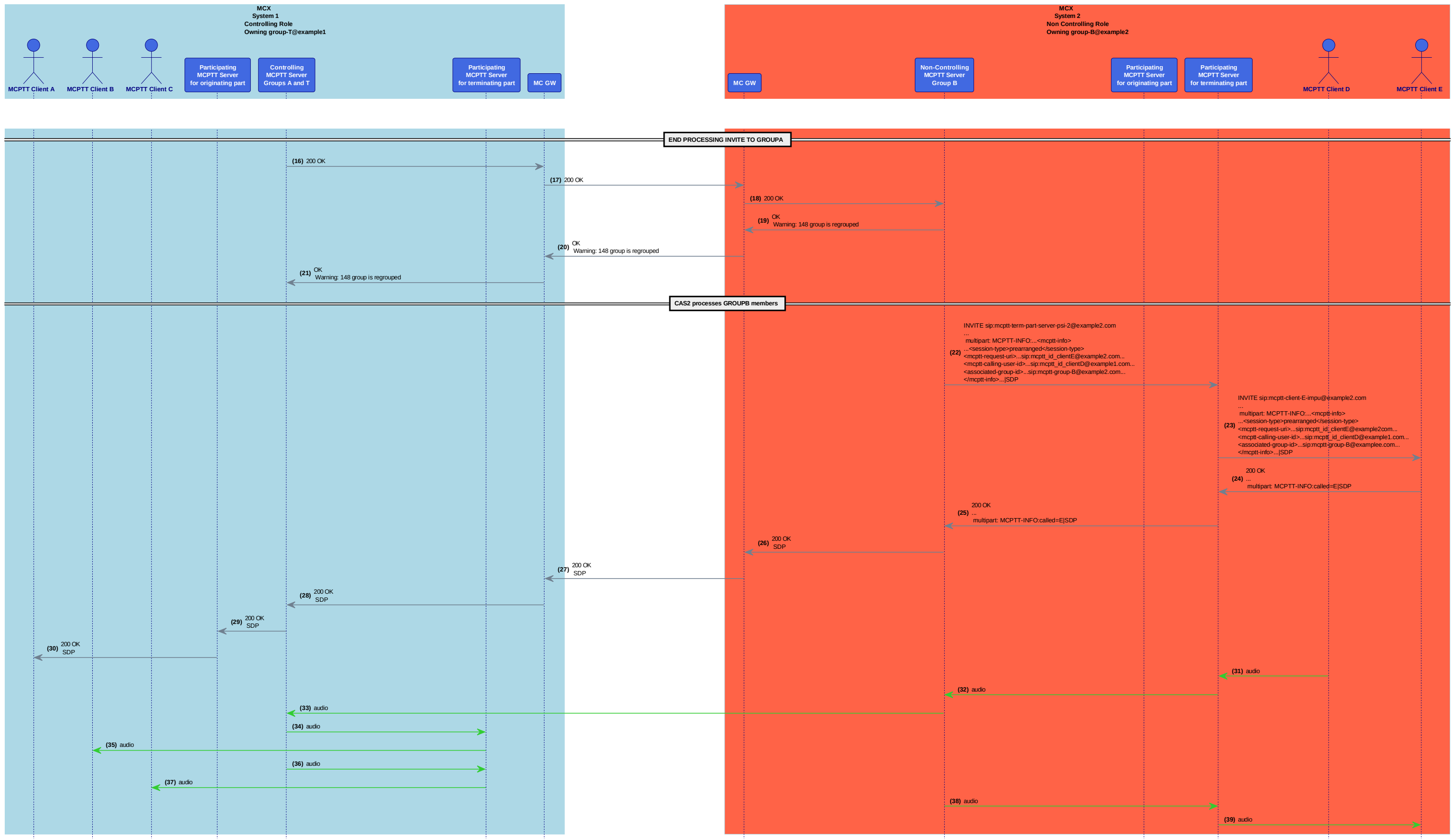


Figure 181: IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/NONCTRL/UNTRUSTED/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 195: IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/NONCTRL/UNTRUSTED/NFC/01

Interoperability Test Description			
Identifier	IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/NONCTRL/UNTRUSTED/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and between two systems in an untrusted mode by connecting MCPTT controlling and non-controlling servers of both through the MC GWs when the call is triggered from a constituent group member (in the "non-controlling" system)		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Group re-grouping procedure already finished for the temporary group • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 4 (mcptt_id_clientD@example2.com) member of a constituent group owned by the CAS in system 2 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_clientD@example2.com
	3	check	INVITE received at the MCPTT controlling server of the constituent in system 2
	4	check	The MCPTT "non-controlling" server loads the group document of the constituent group and learns that it is now part of a temporary group with a controlling in system 1
	5	check	The non controlling server in system 1 sends an INVITE request to the temporary group (mcptt-group-T) controlling server in system 1 through the exit and entry MC GWs
	6	check	The controlling server at system 1 creates an INVITE per each of the other constituent groups different from the calling one
	7	check	CAS1 process the INVITE for mcptt-group-A by sending INVITE to all the terminating participating servers of each mcptt_id_clientX@example1.com
	8	check	The non controlling answers to the resulting 200 OK from the controlling with a 148 warning
	9	check	The controlling server at system 2 creates an INVITE per member of the constituent calling group
	10	check	INVITE to all the terminating participating servers of each mcptt_id_clientX@example2.com (members of group B)
	11	check	"m" INVITEs received at mcptt_id_clientX
	12	verify	Call connected and multiple media flows exchanged between two systems

12.2.5 MCPTT User in an MCS system owning the temporary group initiates an on-demand chat MCPTT Group Call [IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/CTRL/NFC/01]

NOTE: Issues in the core specs identified when describing this test case.

According to clause 10.1.2.2.1.1 upon receiving a request from an MCPTT user to initiate an MCPTT group call using an MCPTT group identity identifying a chat MCPTT group, the MCPTT client will check whether the group document does not contain a <list-service> element that contains a <preconfigured-group-use-only> element set to the value "true".

Then the MCPTT client shall generate an initial SIP INVITE request with Request-URI of the SIP INVITE request to the public service identity identifying the participating MCPTT function serving the MCPTT user, the <session-type> element set to a value of "chat", the <mcptt-request-uri> element set to the temporary group identity, the <mcptt-client-id> element set to the MCPTT client ID of the originating MCPTT client and send it to the participating.

The participating, according to clause 10.1.2.3.1.1, upon receipt of a "SIP INVITE request for originating participating MCPTT function" for a group identity identifying a chat MCPTT group shall determine the MCPTT ID of the calling user (from public user identity in the P-Asserted-Identity header), shall determine the public service identity of the controlling MCPTT function associated with the group identity in the SIP INVITE request and generate a SIP INVITE request as specified in clause 6.3.2.1.3, set the Request-URI to the public service identity of the controlling MCPTT function and include the MCPTT ID of the calling user in <mcptt-calling-user-id>.

The controlling, according to clause 10.1.2.4.1.1 shall retrieve the necessary group document(s) from the group management server for the group identity contained in the SIP INVITE request and carry out initial processing as specified in clause 6.3.5.2 (the requested group identity refers to the group identity in the <mcptt-request-uri>) and continue with the rest of the steps if the checks in that clause succeed (more specifically step 4 b) i) the group document includes an <on-network-temporary> element, then the group document to assess the group id is associated with a temporary group).

After completion of clause 6.3.5.2, since the MCPTT chat group session identity does not already exist it shall create a chat group session and allocate an MCPTT session identity for the chat group session, accept the SIP request and generate a SIP 200 (OK) response to the SIP INVITE request and send the SIP 200 (OK) response to the MCPTT client.

Later, in case a user in a constituent group in another system triggers the same chat call, it will actually follow the very same sequence above (since there is no reference to the constituent group anywhere) but the controlling will return a session id since the chat group call is ongoing.

Message Sequence Diagram

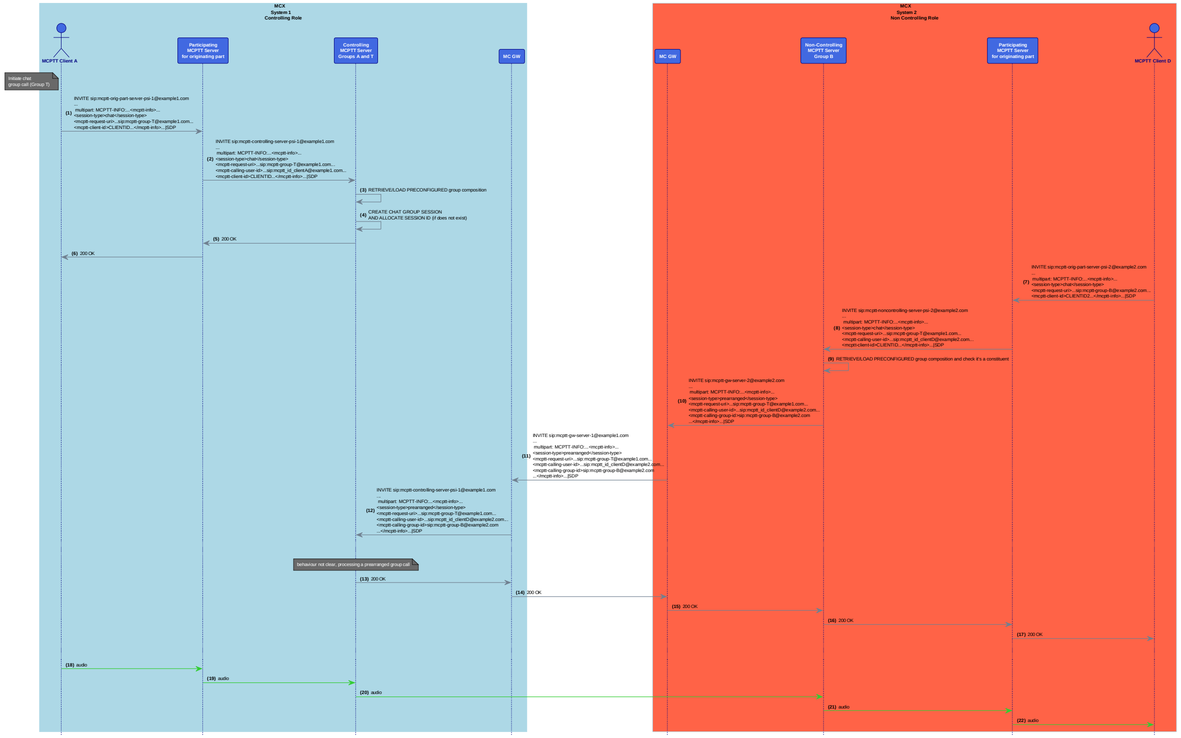

Figure 182: IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/CTRL/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 196: IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/CTRL/NFC/01

Interoperability Test Description			
Identifier	IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/CTRL/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and between two systems (connected by MC GWs) when a chat group call is triggered from a user in the controlling system		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Group re-grouping procedure already finished for the temporary group • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example1.com) initiates a chat group call to mcptt-group-T (temporary group)
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example1.com
	3	check	INVITE received at the MCPTT controlling server in system 1
	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 allocates a session ID for the chat group call and returns it to the calling user
	6	stimulus	A user in system 2 wants to join the ongoing temporary chat group call by sending the INVITE to the participating server.
	7	check	Initial INVITE processed in the originating participating in system 2 and forwarded to the controlling in system 1 (through the MC GWs)
	8	check	The controlling server receives the invite, checks that there is an ongoing chat group call and returns the session ID
	9	verify	Call connected and multiple media flows exchanged between the 2 systems

12.2.6 MCPTT User in an MCS system owning a constituent group initiates an on-demand chat MCPTT Group Call [IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/NONCTRL/NFC/01]

NOTE 1: Issues in the core specs identified when describing this test case.

This test case is initiated by an MCPTT user in system 2 initiating a chat group call to the temporary group group-T owned by the controlling server in system 1.

According to clause 10.1.2.3.1.1 in ETSI TS 124 379 [9] such INVITE will be processed by the originating participating in system 2 which, according to step 8, and notes 6 and 7, shall determine the public service identity of the controlling MCPTT function associated with the group identity in the SIP INVITE request. That can be (would be in this case) the controlling MCPTT function in the primary MCPTT system or in a partner MCPTT system in a different trust domain. If this is the case then the public service identity can identify the MCPTT gateway server that acts as an entry point in the partner MCPTT system from the primary MCPTT system.

The controlling in system 1 will therefore follow the procedures in clause 10.1.2.4.1.1 and, upon receipt of a "SIP INVITE request for controlling MCPTT function of an MCPTT group" containing a group identity identifying a chat MCPTT group, the controlling MCPTT function shall create a chat group session and allocate an MCPTT session identity for the chat group session since the MCPTT chat group session identity does not already exist and answer it back properly.

Later if a user in system 1 joins the temporary chat group call the controlling will retrieve the ongoing session identity and answer a 200 OK with the proper Contact.

NOTE 2: That some expected behaviour of the non-controlling is defined but not triggered:

- According to clause 10.1.2.5.1.1 upon receiving a SIP INVITE request for non-controlling MCPTT function of an MCPTT group" the MCPTT server can be acting as a controller MCPTT function in an ongoing chat group call or, if a chat group call is not ongoing, be initiated as an non-controlling MCPTT function and invite MCPTT users.

- If a chat group call is not ongoing the MCPTT server will perform the actions specified in clause 10.1.2.5.1.2. Then the non-controlling MCPTT server, if the partner MCPTT system does not have a mutual aid relationship with the primary MCPTT system identified by the contents of the P-Asserted-Identity, will reject the "SIP INVITE request for non-controlling MCPTT function of an MCPTT group" with a SIP 403 (Forbidden) response, with warning text set to "128 isfocus already assigned" in a Warning header field as specified in clause 4.4, and will not process the remaining steps.

Message Sequence Diagram

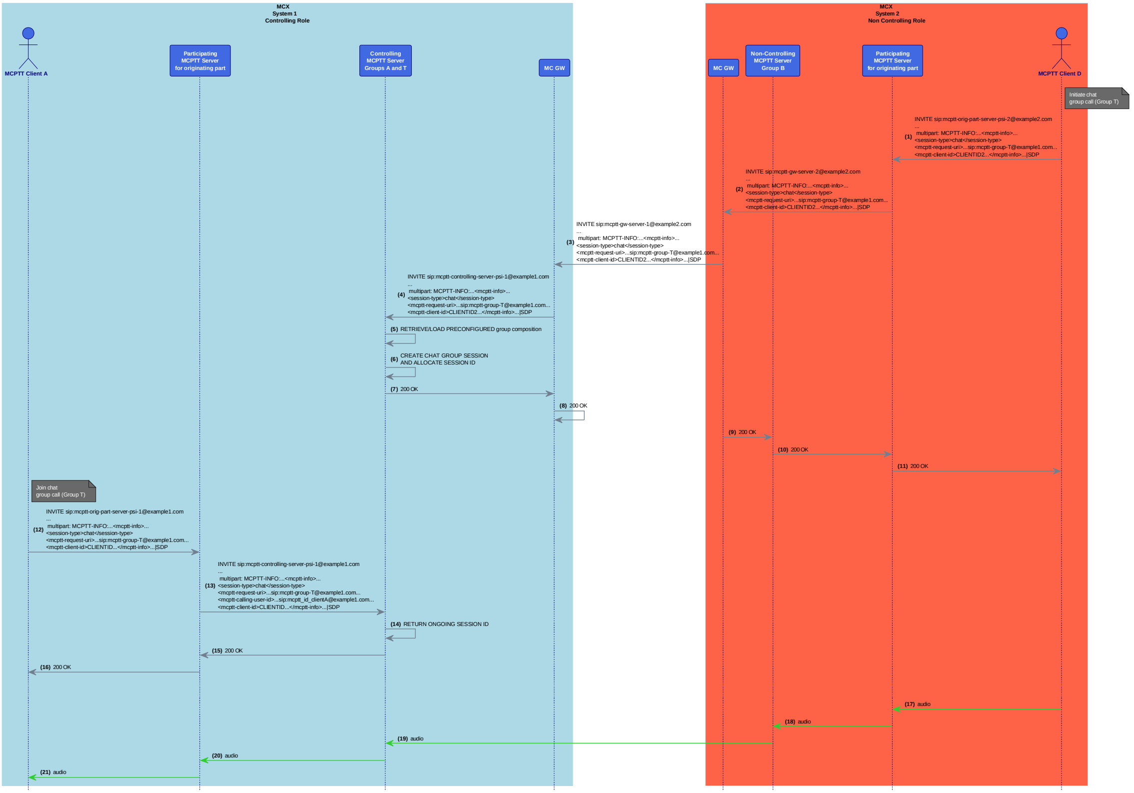

Figure 183: IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/NONCTRL/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 197: IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/NONCTRL/NFC/01

Interoperability Test Description			
Identifier	IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/NONCTRL/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and between two systems (connected by MC GWs) when a chat group call is triggered from a user in the "non-controlling" system		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Group re-grouping procedure already finished for the temporary group • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 4 (mcptt_id_clientD@example2.com) initiates a chat group call to mcptt-group-T (temporary group)
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientD@example2.com
	3	check	The participating forwards the call through the MC GWs to the controlling in system 1 owning the temporary group
	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 allocates a session ID for the chat group call and returns it to the calling user
	6	stimulus	A user in system 1 wants to join the ongoing temporary chat group call by sending the INVITE to the participating server.
	7	check	Initial INVITE processed in the originating participating and forwarded to the controlling
	8	check	The controlling server receives the invite, checks that there is an ongoing chat group call and returns the session ID
	9	verify	Call connected and multiple media flows exchanged between the 2 systems

12.3 MCVideo

12.3.1 Common remarks

NOTE: Some inconsistencies have been detected in MCVideo cores specs (i.e. ETSI TS 124 281 [7]). MCPTT example have been followed to cover the gaps and solve the inconsistencies when possible.

12.3.2 MCVideo User in an MCS system owning the temporary group initiates an on-demand prearranged MCVideo Group Call in trusted mode [IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/CTRL/TRUSTED/NFC/01]

NOTE 1: According to clause 9.2.1.4.1.2 in ETSI TS 124 281 [7] for the controlling the equivalent to MCPTT trusted relationship is suggested (i.e. processing the P-Refused-List) but not confirmed due to lack of stage 2 definition. Similarly for the non-controlling part in clause 9.2.1.5.2.2 step 5 is voided so that the use of P-Refused-List would not be usable. Therefore in this test case the equivalent behaviour to MCPTT [IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/CTRL/TRUSTED/NFC/01] is adopted.

NOTE 2: According to clause 9.2.1.2.1.1 in ETSI TS 124 281 [7] upon receiving a request from an MCVideo user to establish an MCVideo prearranged group session the MCVideo client would shall generate an initial SIP INVITE and set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user, with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "prearranged", the <mcvideo-request-uri> element set to the group identity, the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and <associated-group-id> element set to the MCVideo group ID of a constituent group the MCVideo client is member of.

It shall send the SIP INVITE request towards the MCVideo originating participating server.

That one, according to clause 9.2.1.3.1, upon receipt of such "SIP INVITE request for originating participating MCVideo function" shall determine the MCVideo ID of the calling user from public user identity in the P-Asserted-Identity header field of the SIP INVITE request and, after checking it is allowed, affiliated and no emergency/imminent peril indication is included, shall determine the public service identity of the controlling MCVideo function associated with the group identity (the temporary group). In fact, if incoming SIP INVITE request contains an <associated-group-id> element, then the group identity contained in the <mcvideo-request-uri> element is determined to be a TGI or the identity of a group regroup based on a preconfigured group and the participating MCVideo function and the participating shall generate a SIP INVITE request as specified in clause 6.3.2.1.8.

Therefore, it shall determine the public service identity of the non-controlling MCVideo function associated with the group identity of the constituent group contained in the <associated-group-id> element, shall set the Request-URI to that identity and the <mcvideo-calling-user-id> element to the MCVideo ID of the calling user that was determined when the participating MCVideo function received the SIP INVITE request from the client and forward the INVITE to that (non) controlling (in the sequence diagram cas1 in system 1 is controlling for both group-T and group-A).

The (non) controlling, following clause 9.2.1.4.2, since the group identity refers to the group identity from the <mcvideo-request-uri> (that of the temporary group in the sequence diagram) of the incoming SIP INVITE request and following step 5) the group identity is associated with a group document maintained by the GMS, it shall retrieve the necessary group document(s) from the group management server for the group identity contained in the SIP INVITE request and carry out initial processing as specified in clause 6.3.5.2. According to step 4 b) i) (the group document includes an <on-network-temporary> element, then the group document is associated with a TGI) -no more actions in clause 6.3.5.2.

Later it shall perform the actions as described in clause 6.3.3.2.2 (therefore cache SIP feature tags, if received in the Contact header field and if the specific feature tags are supported), create a prearranged group session and allocate an MCVideo session identity for the prearranged group call.

Since if the group identity in the "SIP INVITE request for controlling MCVideo function of an MCVideo group" is a TGI it shall, for each of the constituent MCVideo groups except for the calling MCVideo group identified in the <mcvideo-calling-group-id> element of the incoming SIP INVITE generate a SIP INVITE request towards the MCVideo server that owns the constituent MCVideo group identity by following the procedures in clause 9.2.1.4.1.2. Theregore it shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP INVITE request <mcvideo-request-uri> element set to the group identity of the MCVideo group hosted by the noncontrolling MCVideo function in the interconnected MCVideo system; and the <mcvideo-calling-group-id> element set to the group identity of the group served by the controlling MCVideo function.

NOTE 3: According to notes 2 and 3 in the clause 9.2.1.4.1.2 in ETSI TS 124 281 [7], if the non-controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system and the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

The non controlling in system 2, according to clause 9.2.1.5.2.2, upon receiving a "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" and the partner MCVideo system does not have a mutual aid relationship with the primary MCVideo system identified by the contents of the P-Asserted-Identity, it SHOULD reject the "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" with a SIP 403 (Forbidden) response, with warning text set to "128 isfocus already assigned" in a Warning header field as specified in clause 4.4, and shall not process the remaining steps.

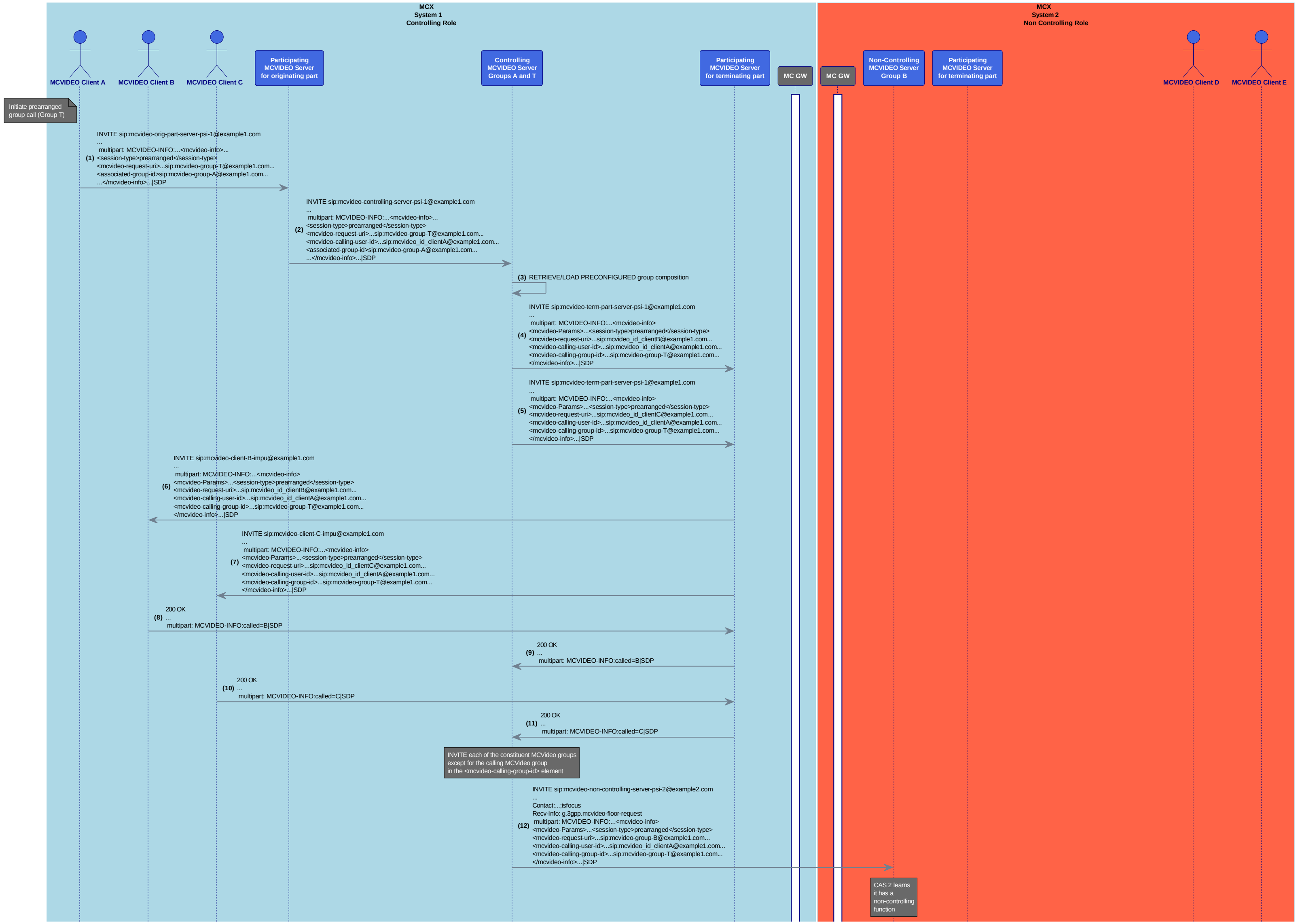
NOTE 4: As stated as the beginning of this test case the special situation in ETSI TS 124 281 [7] and associated note is highlighted: "*in 3GPP TS 24.379 clause 10.1.1.5.2.2, step 5 deals with "a trusted mutual aid relationship between the partner MCPTT system and the primary MCPTT system" and references 3GPP TS 23.379 clause 10.6.2.4.2*". And, although "*there is no equivalent clause in 3GPP TS 23.281. If 3GPP TS 23.281 were to include an equivalent clause, this step 5 can be used for a step 5 equivalent to that of 3GPP TS 24.379*" but step 5 is voided.

The usage of the P-Refused-Uri mechanism for trusted mutual aid relationships also will be assumed for MCVideo.

The controlling, upon receiving SIP 403 (Forbidden) response for the SIP INVITE request and the response contains a Warning header field with the MCVideo warning code "128" and a P-Refused-URI-List header field and an application/resource-lists+xml MIME body including the MCVideo IDs identifying MCVideo users in a interconnected MCVideo system that needs to be invited to the prearranged group call in case of group regrouping using interrogating method. It shall invite MCVideo users as specified in this clause using the list of MCVideo IDs in URI-List.

Finally the client receiving a SIP 2xx response to the SIP INVITE request, the originating MCVideo client shall perform the actions specified in clause 6.2.8.1.4 and may subscribe to the conference event package.

Message Sequence Diagram



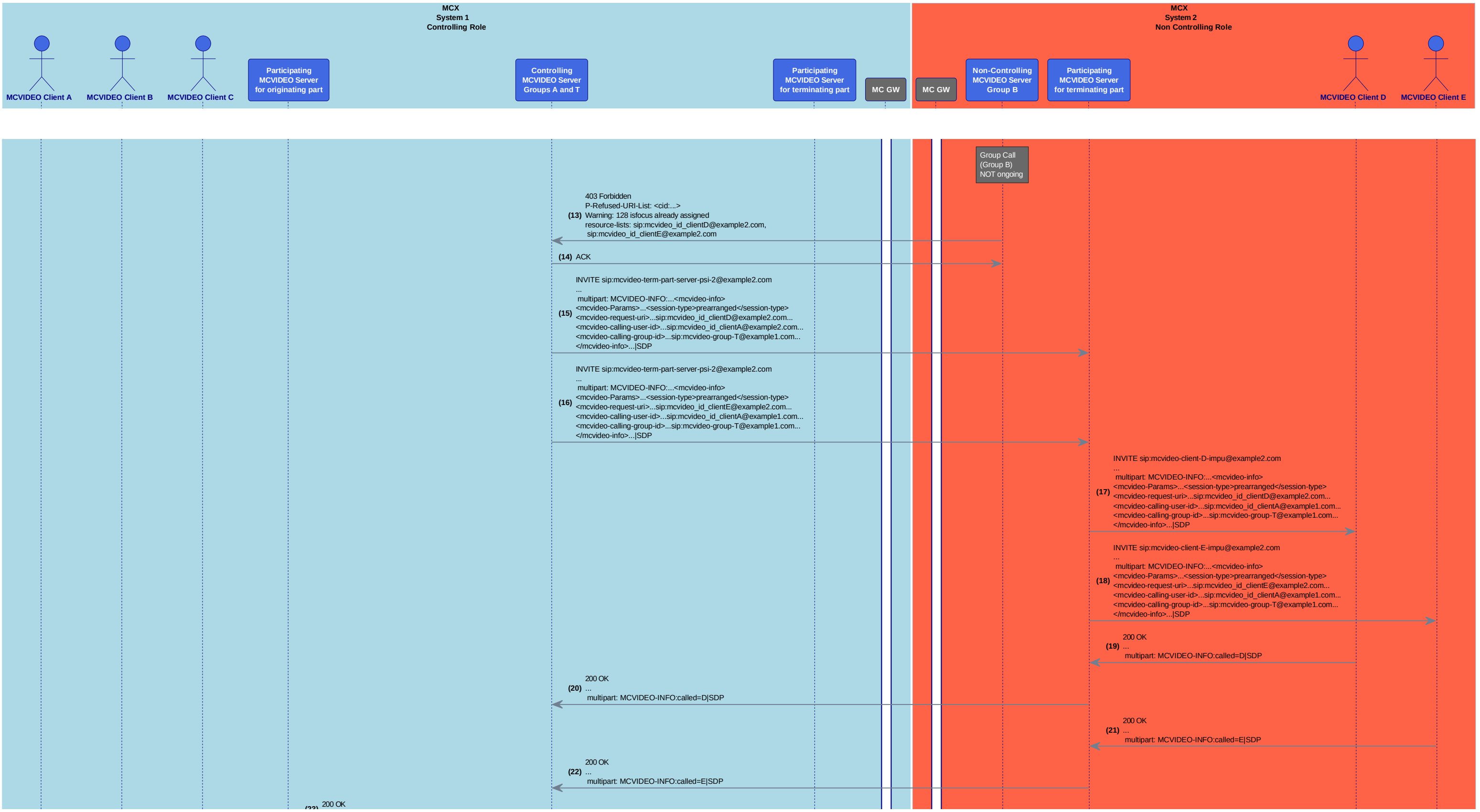


Figure 184: IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/CTRL/TRUSTED/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 198: IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/CTRL/TRUSTED/NFC/01

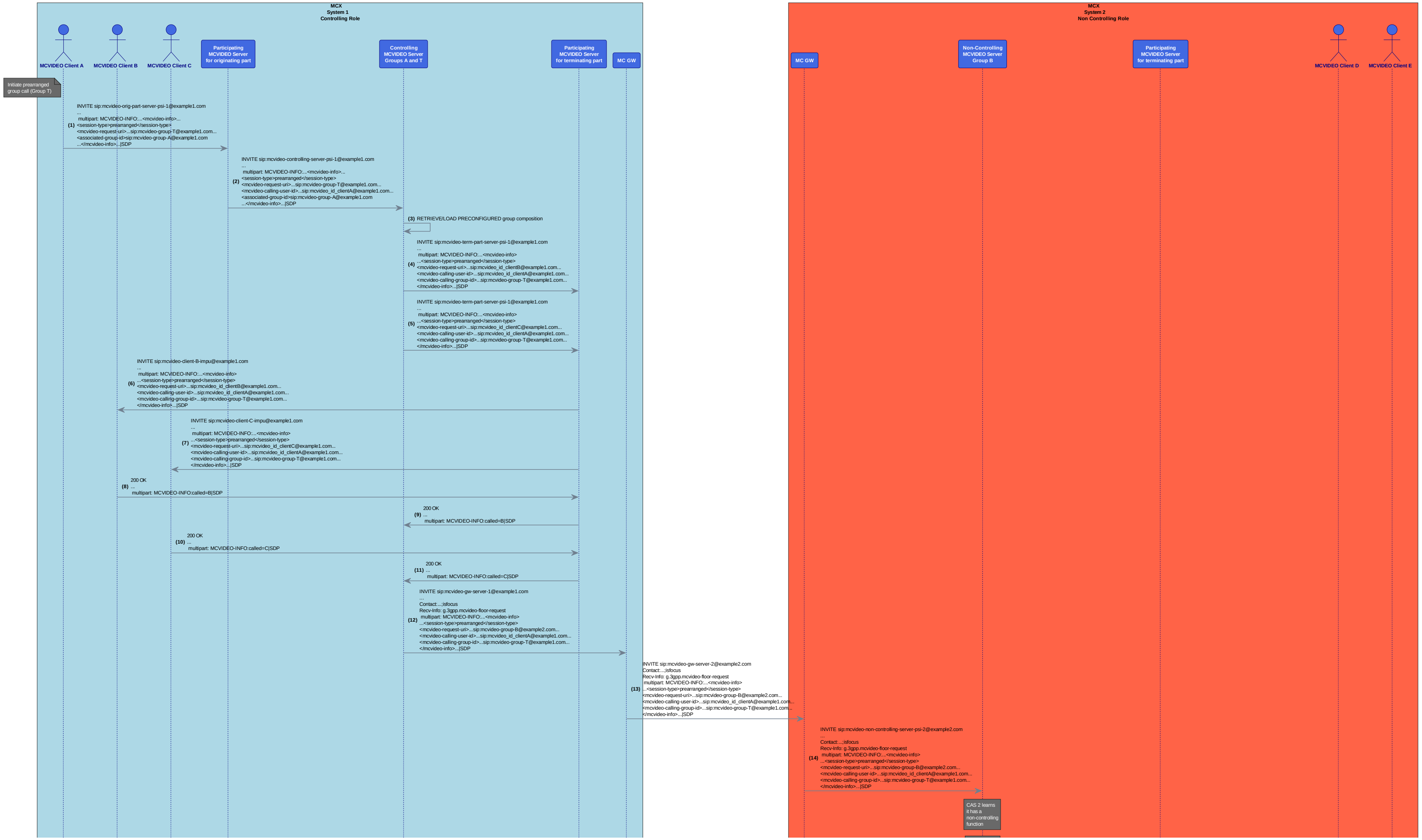
Interoperability Test Description			
Identifier	IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/CTRL/TRUSTED/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and inter-MCX signalling between controlling and non-controlling servers in two systems in a mutual-aid trusted relationship		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MCVIDEO system • Group re-grouping procedure already finished for the temporary group • Calling user is affiliated to the called group • Trusted relationship exists between partner systems		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcvideo_id_clientA@example1.com) initiates a prearranged group call to mcvideo-group-T (temporary group)
	2	check	Dialog creating INVITE received at the MCVIDEO participating server of mcvideo_id_clientA@example1.com
	3	check	INVITE received at the MCVIDEO controlling server in system 1
	4	check	The MCVIDEO 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 mcvideo-group-A@example1.com (one of the constituent group)
	6	check	"n" INVITEs received at the MCVIDEO participating servers of each mcvideo_id_clientX (where X:1..n)
	7	check	"n" INVITEs received at mcvideo_id_clientX
	8	check	The controlling server sends an INVITE request to the non-controlling server, which is owner of the other constituent group (mcvideo-group-B@example2.com) throught the different MC GW (if applies)
	9	check	The non-controlling server sends a 403 Forbidden response to the controlling server including a list of affiliated members to mcvideo-group-B@example2.com
	10	check	The controlling server creates an INVITE per each of the "m" affiliated members of mcvideo-group-B@example2.com
	11	check	"m" INVITEs received at the MCVIDEO participating servers of each mcvideo_id_clientX
	12	check	"m" INVITEs received at mcvideo_id_clientX
	13	verify	Call connected and multiple media flows exchanged between the 2 systems

12.3.3 MCVideo User in an MCS system owning the temporary group initiates an on-demand prearranged MCVideo Group Call in untrusted mode [IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/CTRL/UNTRUSTED/NFC/01]

This test case is equivalent to; [IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/CTRL/TRUSTED/NFC/01] but after step 8 in clause 9.2.1.4.1.1 when the controlling in the originating side sends an INVITE to the non-controlling in the partner system its behavior is that of clause 9.2.1.5.2.2 Initiating a prearranged group call. Therefore, upon receiving a "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" and since the prearranged group call is not ongoing, the non-controlling MCVideo function of an MCVideo group shall retrieve the group document from the group management server for the MCVideo group ID contained in the <mcvideo-request-uri> element (that of the constituent group) and carry out initial processing as specified in clause 6.3.5.2.

Afterwards it will cache the content of the SIP INVITE request, determine the members to invite to the prearranged MCVideo group call as specified in clause 6.3.5.5 and invite each group member to the group session, as specified in clause 9.2.1.5. Finally unless a SIP response has been sent to the controlling MCVideo function it will wait for the first SIP provisional response or first SIP 200 (OK) response from one of the invited MCVideo clients, before sending a response to the SIP INVITE request for noncontrolling MCVideo function of an MCVideo group.

Message Sequence Diagram



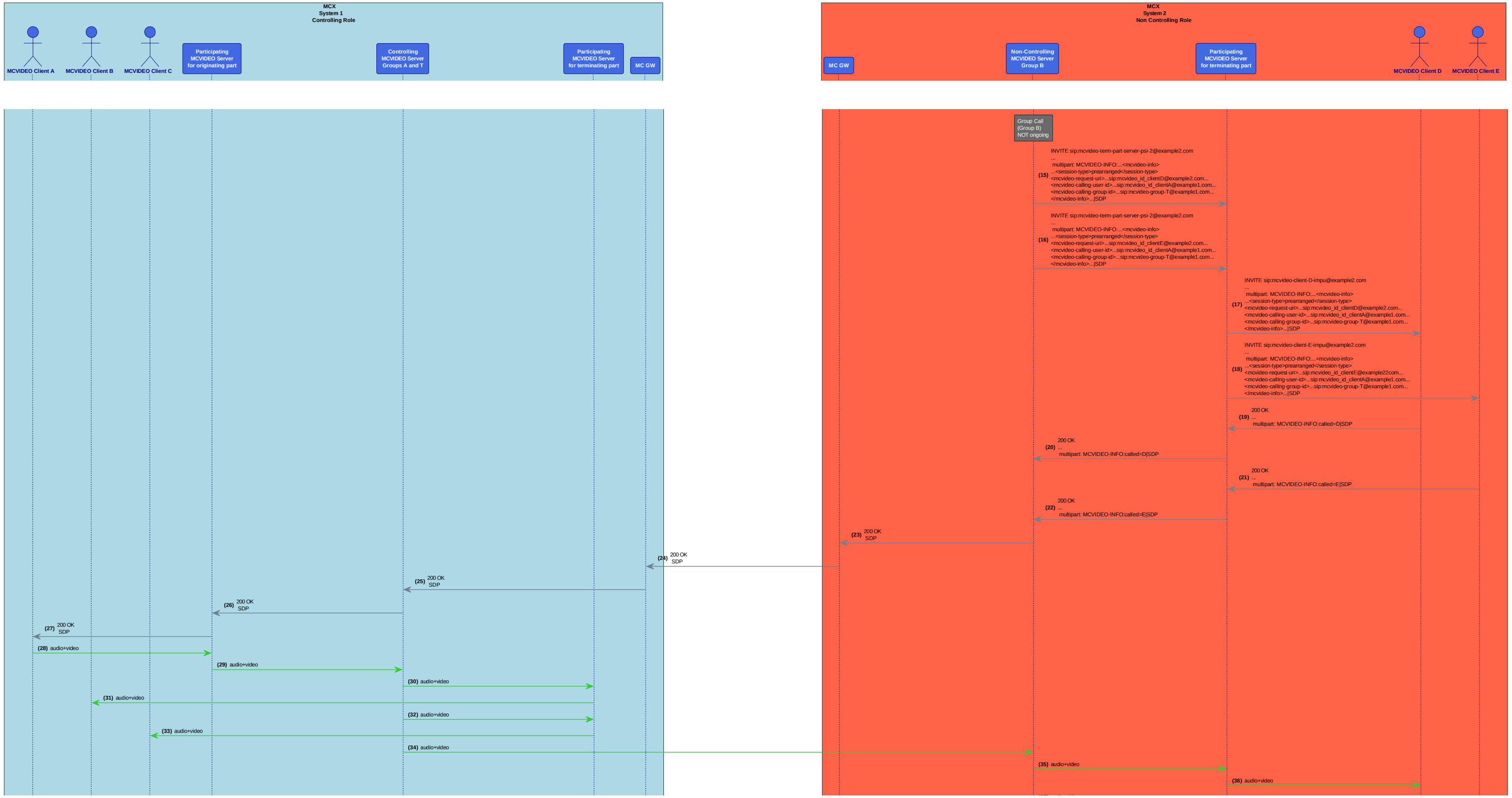


Figure 185: IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/CTRL/UNTRUSTED/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 199: IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/CTRL/UNTRUSTED/NFC/01

Interoperability Test Description			
Identifier	IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/CTRL/UNTRUSTED/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and between two systems in an untrusted mode by connecting MCVIDEO controlling and non-controlling servers of both systems through the MC GWs		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MCVideo system • Group re-grouping procedure already finished for the temporary group • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcvideo_id_clientA@example1.com) initiates a prearranged group call to mcvideo-group-T (temporary group)
	2	check	Dialog creating INVITE received at the MCVideo participating server of mcvideo_id_clientA@example1.com
	3	check	INVITE received at the MCVideo controlling server in system 1
	4	check	The MCVideo 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 mcvideo-group-A@example1.com (one of the constituent group)
	6	check	"n" INVITEs received at the MCVideo participating servers of each mcvideo_id_clientX@example1.com
	7	check	"n" INVITEs received at mcvideo_id_clientX@example1.com
	8	check	The controlling server sends an INVITE request to the non-controlling server, which is owner of the other constituent group (mcvideo-group-B@example2.com) through the exit and entry MC GWs
	9	check	The non-controlling server at system 2 creates an INVITE per each of the "m" affiliated members of mcvideo-group-B@example2.com
	10	check	"m" INVITEs received at the MCVideo participating servers of each mcvideo_id_clientX@example2.com
	11	check	"m" INVITEs received at mcvideo_id_clientX
	12	verify	Call connected and multiple media flows exchanged between two systems

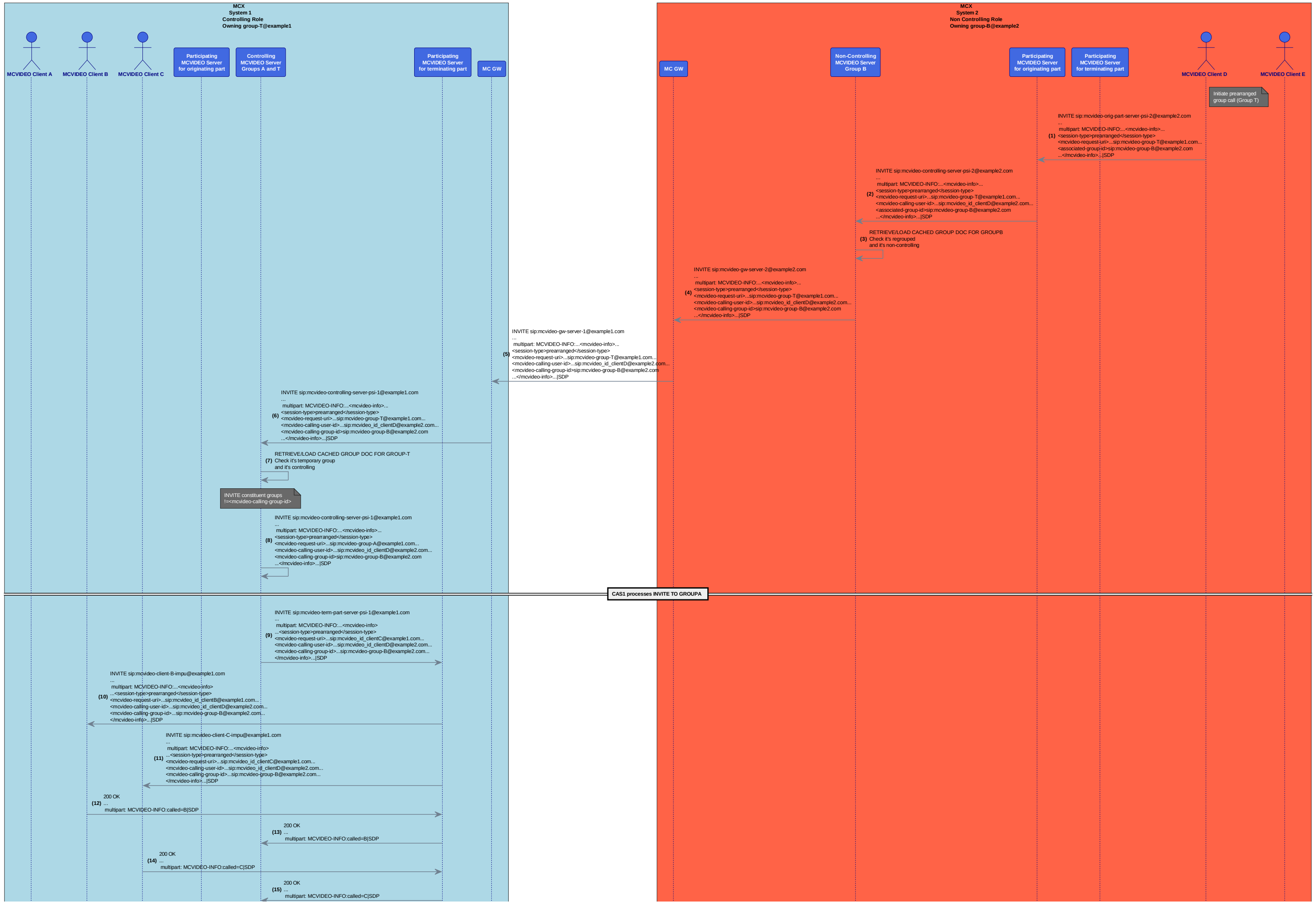
12.3.4 MCVideo User in an MCS system owning a constituent group initiates an on-demand prearranged MCVideo Group Call [IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/NONCTRL/NFC/01]

This test case is equivalent to [IMCX/CONN/MCPTT/ONN/GROUP/PREA/ONDEM/NONCTRL/NFC/01].

After the MCVideo client in system 2 generating the SIP INVITE, the participating according to clause 9.2.1.5.5 in ETSI TS 124 281 [7] upon receiving a "SIP INVITE request "SIP INVITE request from participating MCVideo function for controlling MCVideo function of an MCVideo group", since a prearranged group session is not ongoing, the non-controlling MCVideo-function shall retrieve the group document from the group management server for the MCVideo group ID contained in the <associated-group-id> element and generate a SIP INVITE request towards the controlling MCVideo function as specified in clause 6.3.4.1.4: that is, setting the <mcvideo-request-uri> element set to the identity of the TGI received in the <mcvideo-request-uri> element of the received SIP INVITE, the <mcvideo-calling-group-id> element set to the identity of the constituent group received in the <associated-group-id> element of the received SIP INVITE and <mcvideo-calling-user-id> element set to the identity of the calling user received in the <mcvideo-calling-user-id> element of the received SIP INVITE. Later it shallsend the SIP INVITE request to the controlling MCVideo.

Upon receipt of a SIP 2xx response to the SIP INVITE request sent to the controlling MCVideo function as specified above, the non-controlling MCVideo function will send the SIP ACK request to the controlling MCVideo function and generate a SIP 200 (OK). Then it shall start acting as a non-controlling MCVideo function, determine the members to invite to the prearranged MCVideo group call as specified in clause 6.3.5.2; and invite each group member.

Message Sequence Diagram



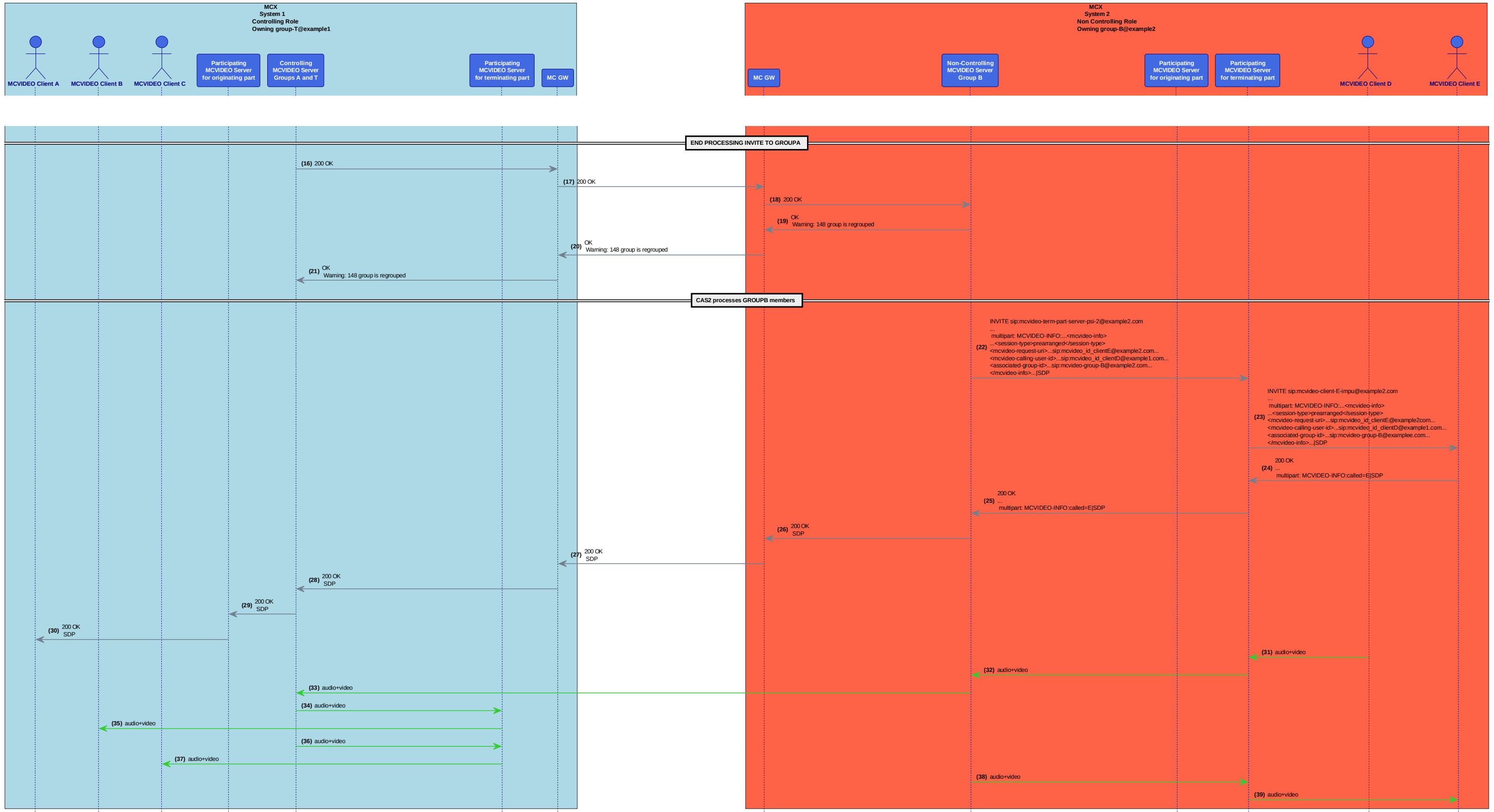


Figure 186: IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/NONCTRL/UNTRUSTED/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 200: IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/NONCTRL/UNTRUSTED/NFC/01

Interoperability Test Description			
Identifier	IMCX/CONN/MCVIDEO/ONN/GROUP/PREA/ONDEM/NONCTRL/UNTRUSTED/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and between two systems in an untrusted mode by connecting MCPTT controlling and non-controlling servers of both through the MC GWs when the call is triggered from a constituent group member (in the "non-controlling" system)		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7]) • TC (see ETSI TS 124 581 [15] and other references in ETSI TS 124 281 [7]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 281 [7])		
Applicability	• MCVideo-Client_ONN-MCVideo-CALL, MCPTT-Client_AMR-WB • MCVideo-Client_H264, MCVideo-Client_AFFIL • MCVideoClient_ONN-MCVideo-TC (clause 6.2) • MCVideo-Part_ONN-MCVideo-CALL, MCVideo-Part_AFFIL • MCVideo-Part_ONN-MCVideo-TC (clause 6.7) • MCVideo-Ctrl_ONN-MCVideo-CALL, MCVideo-Ctrl_AFFIL (clause 6.8)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 MCVideo system • Group re-grouping procedure already finished for the temporary group • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 4 (mcvideo_id_clientD@example2.com) member of a constituent group owned by the CAS in system 2 initiates a prearranged group call to mcvideo-group-T (temporary group)
	2	check	Dialog creating INVITE received at the MCVideo participating server of mcvideo_id_clientD@example2.com
	3	check	INVITE received at the MCVideo controlling server of the constituent in system 2
	4	check	The MCVideo "non-controlling" server loads the group document of the constituent group and learns that it is now part of a temporary group with a controlling in system 1
	5	check	The non controlling server in system 1 sends an INVITE request to the temporary group (mcvideo-group-T) controlling server in system 1 through the exit and entry MC GWs
	6	check	The controlling server at system 1 creates an INVITE per each of the other constituent groups different from the calling one
	7	check	CAS1 process the INVITE for mcvideo-group-A by sending INVITE to all the terminating participating servers of each mcvideo_id_clientX@example1.com
	8	check	The non controlling answers to the resulting 200 OK from the controlling with a 148 warning
	9	check	The controlling server at system 2 creates an INVITE per member of the constituent calling group
	10	check	INVITE to all the terminating participating servers of each mcvideo_id_clientX@example2.com (members of group B)
	11	check	"m" INVITEs received at mcvideo_id_clientX
	12	verify	Call connected and multiple media flows exchanged between two systems

12.3.5 MCVideo User in an MCS system owning the temporary group initiates an on-demand chat MCVideo Group Call [IMCX/CONN/MCVIDEO/ONN/GROUP/CHAT/ONDEM/CTRL/NFC/01]

According to clause 9.2.2.2.1.1 in ETSI TS 124 281 [7] upon receiving a request from an MCVideo user to establish an MCVideo group session using an MCVideo group identity, identifying a chat MCVideo group, the MCVideo client shall generate an initial SIP INVITE request with the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user, and 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 "chat", the <mcvideo-request-uri> element set to the group identity and the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client. Note that no reference to the associated-group-id element is included.

The originating participating, following clause 9.2.2.3.1.1, after getting the mapping of the mcvideo-id to the received P-Asserted-Identity and checking all permissions and affiliation status shall generate a SIP INVITE request as specified in clause 6.3.2.1.3, setting the Request-URI to the public service identity of the controlling MCVideo function associated with the group identity present in the incoming SIP INVITE request (again, it could be in the partner system, include the MCVideo ID of the calling user in <mcvideo-calling-user-id> and shall forward the SIP INVITE request.

NOTE: Implementation inconsistent in in ETSI TS 124 281 [7] since although reception of a SIP 302 (Moved Temporarily) response to the above SIP INVITE request there no longer exists such behavior in clause 6.3.5.2.

Message Sequence Diagram

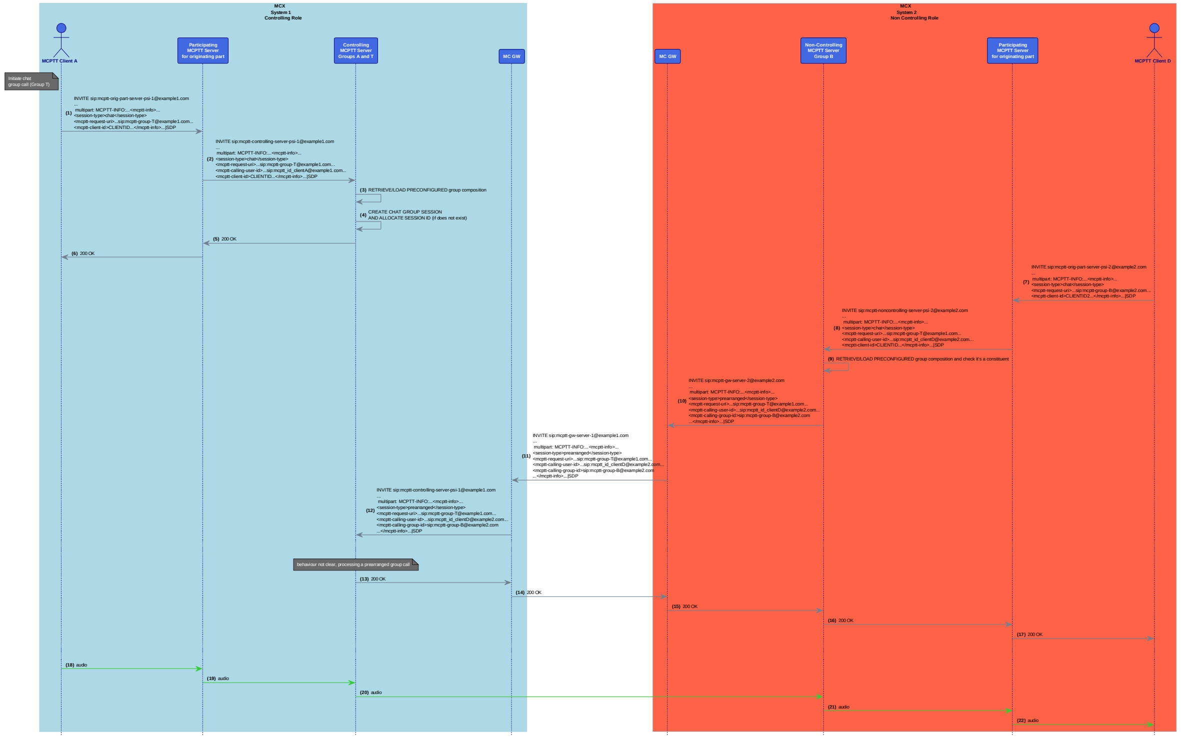

Figure 187: IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/CTRL/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 201: IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/CTRL/NFC/01

Interoperability Test Description			
Identifier	IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/CTRL/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and between two systems (connected by MC GWs) when a chat group call is triggered from a user in the controlling system		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Group re-grouping procedure already finished for the temporary group • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example1.com) initiates a chat group call to mcptt-group-T (temporary group)
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientA@example1.com
	3	check	INVITE received at the MCPTT controlling server in system 1
	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 allocates a session ID for the chat group call and returns it to the calling user
	6	stimulus	A user in system 2 wants to join the ongoing temporary chat group call by sending the INVITE to the participating server.
	7	check	Initial INVITE processed in the originating participating in system 2 and forwarded to the controlling in system 1 (through the MC GWs)
	8	check	The controlling server receives the invite, checks that there is an ongoing chat group call and returns the session ID
	9	verify	Call connected and multiple media flows exchanged between the 2 systems

12.3.6 MCPTT User in an MCS system owning a constituent group initiates an on-demand chat MCPTT Group Call [IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/NONCTRL/NFC/01]

NOTE 1: Issues in the core specs identified when describing this test case.

This test case is initiated by an MCPTT user in system 2 initiating a chat group call to the temporary group group-T owned by the controlling server in system 1.

According to clause 10.1.2.3.1.1 in ETSI TS 124 379 [9] such INVITE will be processed by the originating participating in system 2 which, according to step 8, and NOTES 6 and 7, shall determine the public service identity of the controlling MCPTT function associated with the group identity in the SIP INVITE request. That can be (would be in this case) the controlling MCPTT function in the primary MCPTT system or in a partner MCPTT system in a different trust domain. If this is the case then the public service identity can identify the MCPTT gateway server that acts as an entry point in the partner MCPTT system from the primary MCPTT system.

The controlling in system 1 will therefore follow the procedures in clause 10.1.2.4.1.1 and, upon receipt of a "SIP INVITE request for controlling MCPTT function of an MCPTT group" containing a group identity identifying a chat MCPTT group, the controlling MCPTT function shall create a chat group session and allocate an MCPTT session identity for the chat group session since the MCPTT chat group session identity does not already exist and answer it back properly.

Later if a user in system 1 joins the temporary chat group call the controlling will retrieve the ongoing session identity and answer a 200 OK with the proper Contact.

NOTE 2: Some expected behaviour of the non-controlling is defined but not triggered:

- According to clause 10.1.2.5.1.1 upon receiving a SIP INVITE request for non-controlling MCPTT function of an MCPTT group" the MCPTT server can be acting as a controller MCPTT function in an ongoing chat group call or, if a chat group call is not ongoing, be initiated as an non-controlling MCPTT function and invite MCPTT users.

- If a chat group call is not ongoing the MCPTT server will perform the actions specified in clause 10.1.2.5.1.2. Then the non-controlling MCPTT server, if the partner MCPTT system does not have a mutual aid relationship with the primary MCPTT system identified by the contents of the P-Asserted-Identity, will reject the "SIP INVITE request for non-controlling MCPTT function of an MCPTT group" with a SIP 403 (Forbidden) response, with warning text set to "128 isfocus already assigned" in a Warning header field as specified in clause 4.4, and will not process the remaining steps.

Message Sequence Diagram

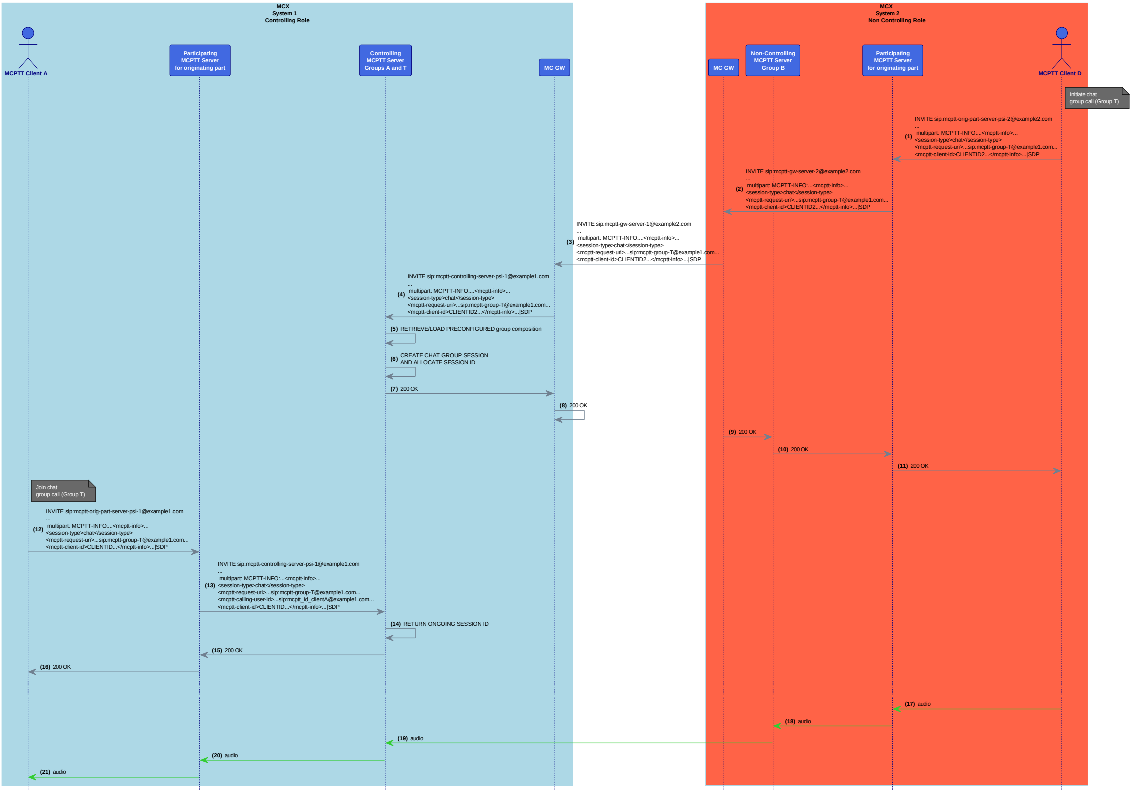

Figure 188: IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/NONCTRL/NFC/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 202: IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/NONCTRL/NFC/01

Interoperability Test Description			
Identifier	IMCX/CONN/MCPTT/ONN/GROUP/CHAT/ONDEM/NONCTRL/NFC/01		
Test Objective	Verify IP connectivity, SIP core/IMS configuration and proper routing, SIP signalling and between two systems (connected by MC GWs) when a chat group call is triggered from a user in the "non-controlling" system		
Configuration(s)	• CFG_ONN_OTT-1 (clause 5.2) • CFG_ONN_UNI-MC-LTE-1 (clause 5.3) • CFG_ONN_MULTI-MC-LTE-1 (clause 5.4)		
References	• SIP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_ONN-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_AFFIL, MCPTT-Client_MCPTT-FC (clause 6.2) • MCPTT-Part_ONN-MCPTT-CALL, MCPTT-Part_AFFIL • MCPTT-Part_MCPTT-FC, MCPTT-Part_RX (CFG_ONN_UNI-MCLTE-1 only) • MCPTT-Part_GCSE (CFG_ONN_MULTI-MC-LTE-1 only) (clause 6.5) • MCPTT-Ctrl_ONN-MCPTT-CALL, MCPTT-Ctrl_AFFIL (clause 6.6)		
Pre-test conditions	• IP connectivity among all elements of the specific scenario • 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 • Group re-grouping procedure already finished for the temporary group • Calling user is affiliated to the called group		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 4 (mcptt_id_clientD@example2.com) initiates a chat group call to mcptt-group-T (temporary group)
	2	check	Dialog creating INVITE received at the MCPTT participating server of mcptt_id_clientD@example2.com
	3	check	The participating forwards the call through the MC GWs to the controlling in system 1 owning the temporary group
	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 allocates a session ID for the chat group call and returns it to the calling user
	6	stimulus	A user in system 1 wants to join the ongoing temporary chat group call by sending the INVITE to the participating server.
	7	check	Initial INVITE processed in the originating participating and forwarded to the controlling
	8	check	The controlling server receives the invite, checks that there is an ongoing chat group call and returns the session ID
	9	verify	Call connected and multiple media flows exchanged between the 2 systems

13 Off-Network (OFF-NW)

13.1 Common remarks

The focus of the off-network related test cases is evaluating the MCX signaling, specially the MCPTT Off-Network Protocol (MONP) and not the D2D ProSE or 5G NR sidelink mechanisms. Therefore, the MCX procedures and reference points will be depicted in the sequence diagrams and the specific coverage situations will be identified by "reachable UEs" meaning those UEs capable of reaching each other at IP level, regardless a direct connection, multihop or some short of UE to network relay mechanism is in place.

13.2 MCPTT

13.2.1 Initiation of an off-network group call with confirm indication when there is no ongoing group call [CONN-MCPTT/OFF/GROUP/01]

This test case comprises the setup of an off-network group call using the confirmation mechanism when there is no already ongoing group call. Note that the whole off-network group calling arbitration logic is driven by the machine state in clause 10.2.2.2 in ETSI TS 124 379 [9], affecting all the off-network group calling test cases in this clause.

In this particular off-network group call related test case the initial preconditions are that there is no ongoing call. Therefore, when the user initiates the group call, the originating UE (UE1) and the targeted UEs are all in the "S1: start-stop" state. As a result of the initiation the MCPTT client in UE1 shall build a GROUP CALL PROBE message based on clause 10.2.2.4.2.1 (and clause 15.1.2) in ETSI TS 124 379 [9], send it according to clause 10.2.1.1.1 and move to the state "S2: waiting for call announcement" till it receives any GROUP_CALL_ANNOUNCEMENT MNOP message from other participants to start the group call OR any timer (TFG1 or TFG3) expires.

Note that before triggering the submission of the initial CALL_PROBE message (built according to clause 15.1.2), the originating UE shall internally carry out a series of procedures to build an initial internal context for the group call including storing the MCPTT group ID as the MCPTT group ID of the call, creating an internal call type control state machine as described in clause 10.2.3.2 and setting CPTT group ID IE to the stored MCPTT group ID of the call.

It will also start timer TFG3 (call probe retransmission) and TFG1 (wait for call announcement) and enter the "S2: waiting for call announcement" state. Then, it will send the GROUP CALL PROBE message as specified in clause 10.2.1.1.1.

As aforementioned, since there is no ongoing group call UE2 and UE 3 will be also in the "S1: start-stop" state and, upon receiving the GROUP CALL PROBE will do nothing according to the state machine definition. Therefore, upon receiving no response to GROUP CALL PROBE message, the timer TFG1 in the MCPTT client in UE1 will expire (after "n" GROUP CALL PROBE retransmission based on TFG3). The originating MCPTT client in UE1 will therefore realize there is no ongoing group call for this MCPTT group id (since no GROUP CALL ANNOUNCEMENT message has been received). It will then move from the state S2 to the state "S3: part of ongoing call", stop timer TFG3 and generate an SDP body as specified in clause 10.2.1.1.2 to be stored as the SDP body of the call. The GROUP CALL ANNOUNCEMENT to be sent as specified in clause 15.1.3 will include not only that SDP but also a random number with uniform distribution between 0 and 65535 as the call identifier of the call, the own MCPTT user ID as the originating MCPTT user ID of the call, the MCPTT group ID of the call, the current UTC time as the call start time of the call and the Confirm mode indication IE set to "true".

The MCPTT client in UE will send the GROUP CALL ANNOUNCEMENT message as specified in clause 10.2.1.1.1.

According to clause 10.2.2.4.3.3, when in the "S1: start-stop" state the MCPTT clients in UE2 and UE3, upon receiving a GROUP CALL ANNOUNCEMENT message with the MCPTT group ID IE not matching MCPTT group ID of the call stored for other state machines, will store the received information (i.e. SDP, Call Identifier, User and group IDs, etc.) and create a call type control state machine as described in clause 10.2.3.2. Considering that both terminating UEs are configured that the terminating MCPTT user acknowledgement is required upon a terminating call request reception they will start timer TFG4 (waiting for the user) enter the "S5: pending user action with confirm indication" state and wait for user confirmation.

When each user actively accepts the incoming group call the MCPTT clients, according to 10.2.2.4.3.4, will stablish their media session based on the received SDP, start the floor control as terminating floor participant and generate a GROUP CALL ACCEPT message as specified in clause 15.1.4 and send it as specified in clause 10.2.1.1.1. They will then stop timer TFG4 and start timers TFG6 and TFG2 and enter the "S3: part of ongoing call" state.

Message Sequence Diagram

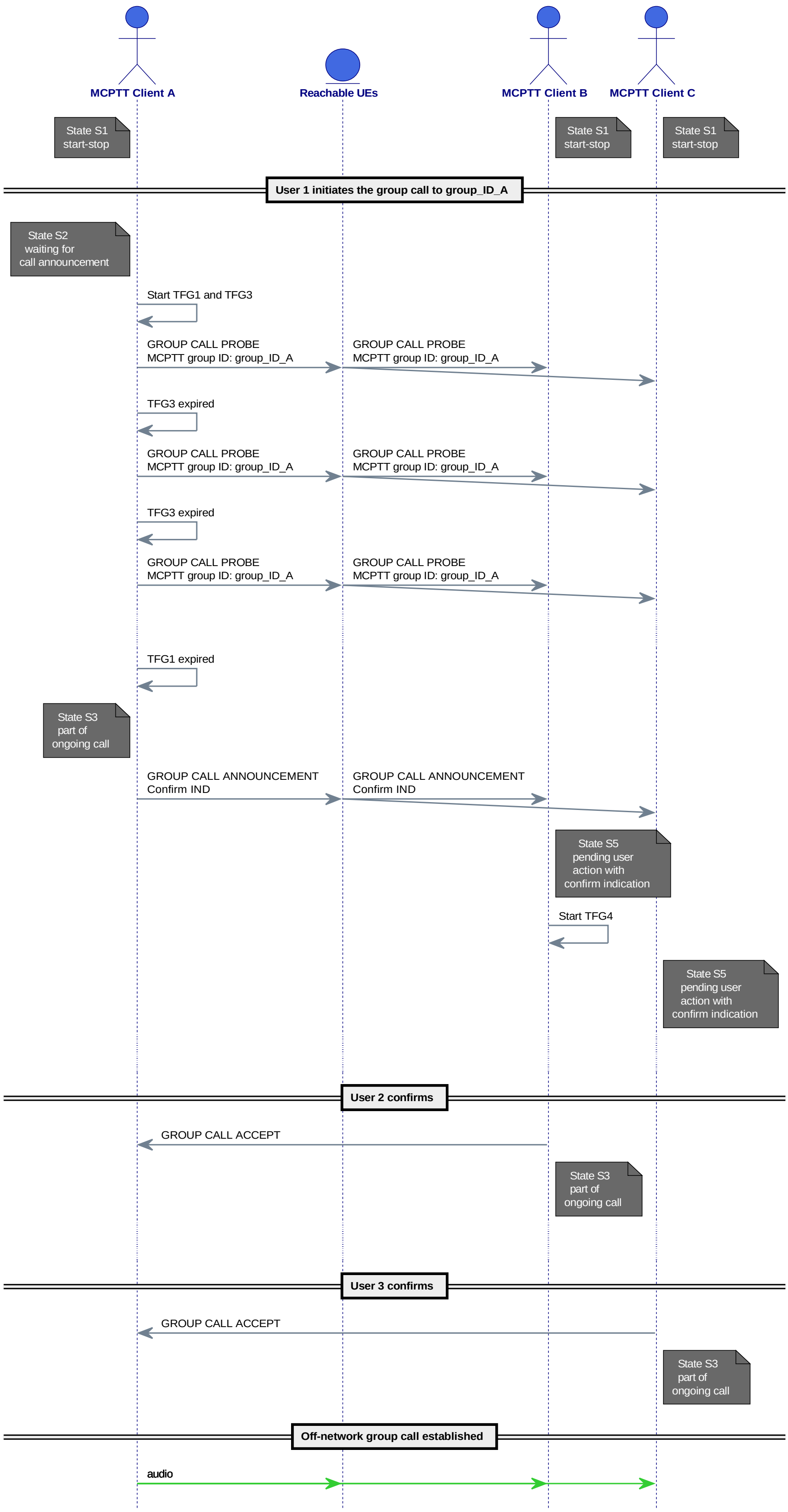

Figure 189: CONN-MCPTT/OFF/GROUP/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 203: CONN-MCPTT/OFF/GROUP/01

Interoperability Test Description			
Identifier	CONN-MCPTT/OFF/GROUP/01		
Test Objective	Verify off-network group call with confirmation indication		
Configuration(s)	• CFG_OFF_GEN-1 (clause 5.5)		
References	• MONP (see ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_OFF-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_OFF-MCPTT-FC (clause 6.2)		
Pre-test conditions	• IP connectivity among the UEs of the specific scenario using any of the underlaying (layer 2) discovery and transmission mechanisms		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example1.com) initiates an off-network group call to GROUP_ID_A
	2	check	GROUP CALL PROBE message sent by User 1 to all the UEs under off-network coverage
	3	check	GROUP CALL PROBE message retransmitted "n" times
	4	check	TFG1 expires
	5	check	GROUP CALL ANNOUNCEMENT message with confirm indication IE sent by User 1 to all the UEs under off-network coverage
	6	check	MCPTT Clients in UEs 2 and 3 receive the message and enter S5 state till the User confirms
	7	check	GROUP CALL ACCEPT(s) sent back upon User(s) confirm
	8	verify	Off-network group call stablished and media exchanged according to the media session definition in the SDP

13.2.2 Initiation of an off-network group call without confirm indication when there is no ongoing group call [CONN-MCPTT/OFF/GROUP/02]

The signalling asscociated with this test case is equivalent to that in [CONN-MCPTT/OFF/GROUP/01] but the group members, when receiving the GROUP CALL ANNOUNCEMENT, according to clause 10.2.2.4.3.3 step 8 c) in ETSI TS 124 379 [9], since the GROUP CALL ANNOUNCEMENT message does not contain the Confirm mode indication shall enter the "S4: pending user action without confirm indication" state.

Then according to clause 10.2.2.4.3.5 the MCPTT clients in the targeted UEs, will establish a media session according to the received SDP, stop timer TFG4, start TFG6 and TFG6 and enter the "S3: part of ongoing call" state.

Message Sequence Diagram

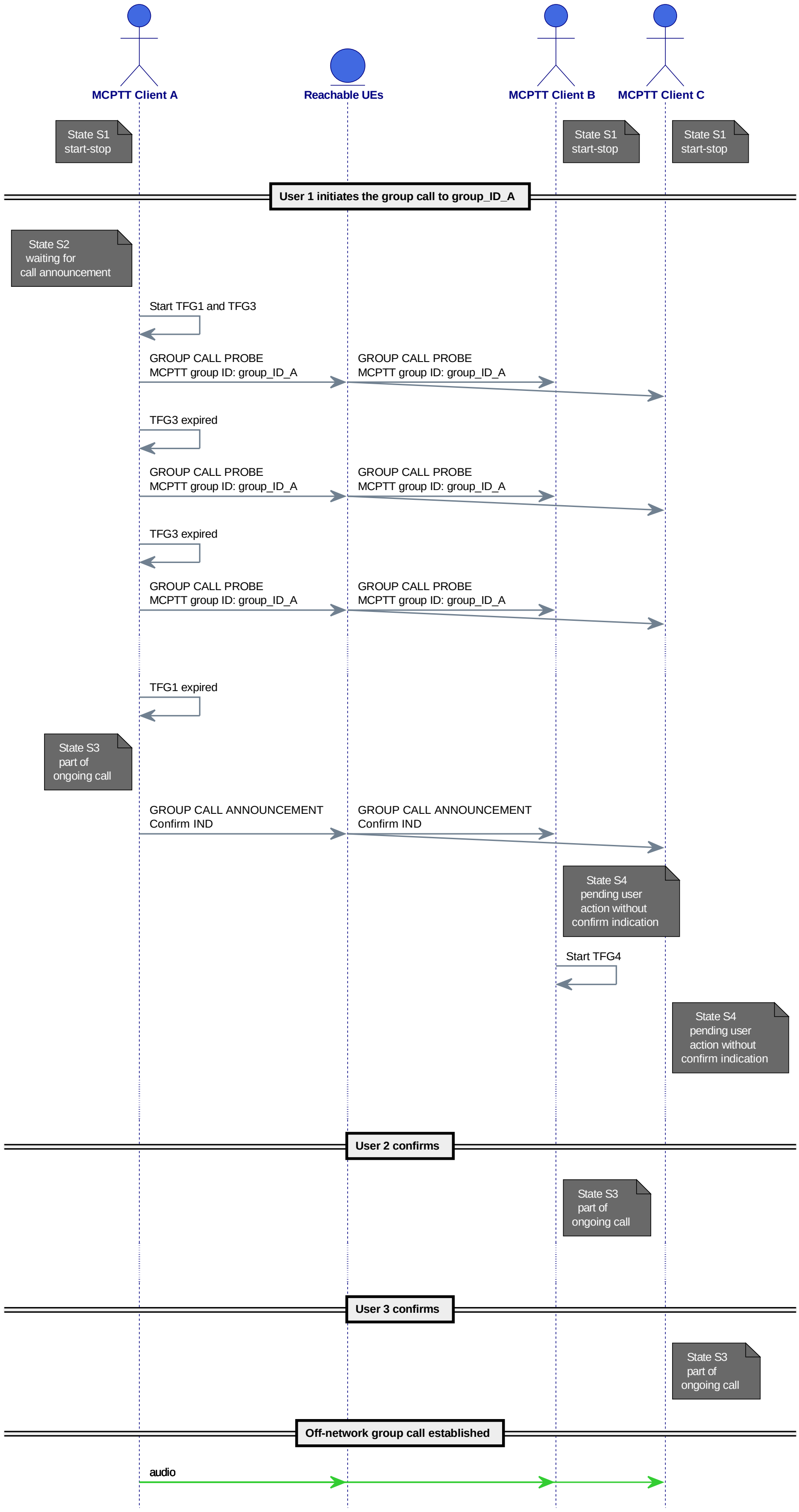

Figure 190: CONN-MCPTT/OFF/GROUP/02 Message Sequence

Message Details

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Trace Pending
```

Interoperability Test Description

Table 204: CONN-MCPTT/OFF/GROUP/02

Interoperability Test Description			
Identifier	CONN-MCPTT/OFF/GROUP/02		
Test Objective	Verify off-network group call without confirmation indication		
Configuration(s)	• CFG_OFF_GEN-1 (clause 5.5)		
References	• MONP (see ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_OFF-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_OFF-MCPTT-FC (clause 6.2)		
Pre-test conditions	• IP connectivity among the UEs of the specific scenario using any of the underlaying (layer 2) discovery and transmission mechanisms		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 1 (mcptt_id_clientA@example1.com) initiates an off-network group call to GROUP_ID_A
	2	check	GROUP CALL PROBE message sent by User 1 to all the UEs under off-network coverage
	3	check	GROUP CALL PROBE message retransmitted "n" times
	4	check	TFG1 expires
	5	check	GROUP CALL ANNOUNCEMENT message without confirm indication IE sent by User 1 to all the UEs under off-network coverage
	6	check	MCPTT Clients in UEs 2 and 3 receive the message and enter S4 state till the User confirms
	7	check	Upon User(s) confirmations MCPTT clients enter state S3 and effectively join the call without sending any confirmation back
	8	verify	Off-network group call stablished and media exchanged according to the media session definition in the SDP

13.2.3 Passive join to an ongoing group call [CONN-MCPTT/OFF/GROUP/03]

The signalling and sequence diagram seems equivalent to call [CONN-MCPTT/OFF/GROUP/01] but the timing and triggering is associated to the "Passive join to group call " defined in clause 10.6.3.4 in ETSI TS 123 379 [4].

Therefore the procedure in this test case happens after an initial MCPTT off-network group call is established. The submission of group call announcements including the parameters for the media transfer needs to be performed periodically, in order for the MCPTT client later to join the MCPTT group call as follow according to clause 10.2.2.4.4.1 in ETSI TS 124 379 [9], when in the "S3: part of ongoing call" state, upon expiry of timer TFG2 (call announcement), the MCPTT client shall generate a GROUP CALL ANNOUNCEMENT message as specified in clause 15.1.3.

The new UE that is now in the coverage area (according to Layer 2 discovery and transmissions mechanisms), will then receive the GROUP CAL ANNOUNCEMENT and, following the procedures of clause 10.2.2.4.3.3 and described in the [CONN-MCPTT/OFF/GROUP/01] and [CONN-MCPTT/OFF/GROUP/02] (depending of whether the confirmation indication is enabled or not, will join the ongoing call.

NOTE: In the sequence diagram the "with confirmation indication" case is depicted for illustration purposes only.

Message Sequence Diagram

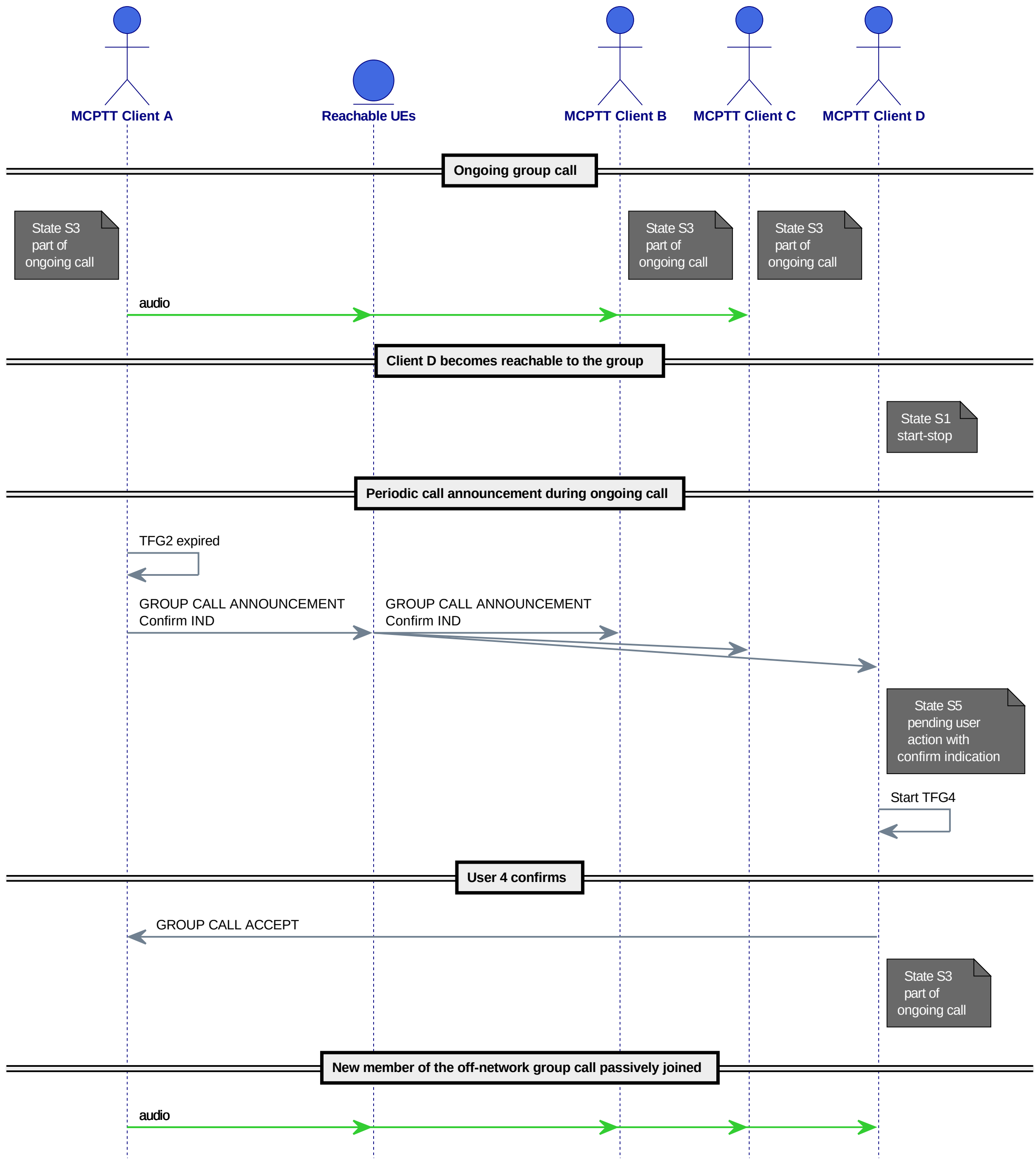

Figure 191: CONN-MCPTT/OFF/GROUP/03 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 205: CONN-MCPTT/OFF/GROUP/03

Interoperability Test Description			
Identifier	CONN-MCPTT/OFF/GROUP/03		
Test Objective	Verify passively joining an ongoing off-network group call by a new UE entering a coverage area		
Configuration(s)	• CFG_OFF_GEN-1 (clause 5.5)		
References	• MONP (see ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_OFF-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_OFF-MCPTT-FC (clause 6.2)		
Pre-test conditions	• IP connectivity among the UEs of the specific scenario using any of the underlaying (layer 2) discovery and transmission mechanisms (including a newly arrived one), ongoing off-network group call with (or without) confirmation indication		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	UE 4 joins the coverage area where there is already an ongoing off-network group call
	2	check	Periodic GROUP CALL ANNOUNCEMENT message with confirm indication IE sent by User 1 to all the UEs (including the new one) under off-network coverage
	3	check	MCPTT Client in UE 4 receives the message and enters S5 state till the User confirms
	4	check	GROUP CALL ACCEPT sent back upon User(s) confirm
	5	verify	Off-network group call stablished and media exchanged according to the media session definition in the original SDP

13.2.4 Initiation of an off-network group call when there is an ongoing group call [CONN-MCPTT/OFF/GROUP/04]

This test case starts with the same situation as in [CONN-MCPTT/OFF/GROUP/03]. While there is an ongoing group call to group_ID_A a new UE (UE4) with MCPTT CLIENT D becomes reachable to this area and, unlike the aforementioned test case, before receiving any periodic GROUP CALL ANNOUNCEMENT, the user triggers the initiation of a group call (to the same group id).

Upon the initial GROUP CALL PROBE by UE4 all the clients already in an ongoing one (state S3) seem to simply ignore the CALL PROBE (according to clause 10.2.2.4.2.3 in ETSI TS 124 379 [9]). Mores specifically, upon receiving a GROUP CALL PROBE message with the MCPTT group ID IE matching the stored MCPTT group ID of the call, the MCPTT clien, if the stored probe response value of the call is set to "false", shall restart TFG2 (call announcement), set the stored probe response of the call to "true" and shall remain in the "S3: part of ongoing call" state.

So, there is no signalling feedback back to UE 4, so that the "late join"-ing one should need to wait anyway for the periodic group call announcement as in clause 10.2.2.4.3.2 to realize there is an ongoing group call and passively join the call.

Therefore, following clause 10.2.2.4.2.3 1 in ETSI TS 124 379 [9], when in the "S2: waiting for call announcement" state and, upon receiving a GROUP CALL ANNOUNCEMENT message with the MCPTT group ID IE matching the stored MCPTT group ID of the call, the MCPTT client shall stop the associated timers, update the SDP and call identifier for the Session to the received one and join the ongoing call as terminating floor participant and enter S3 state.

Message Sequence Diagram

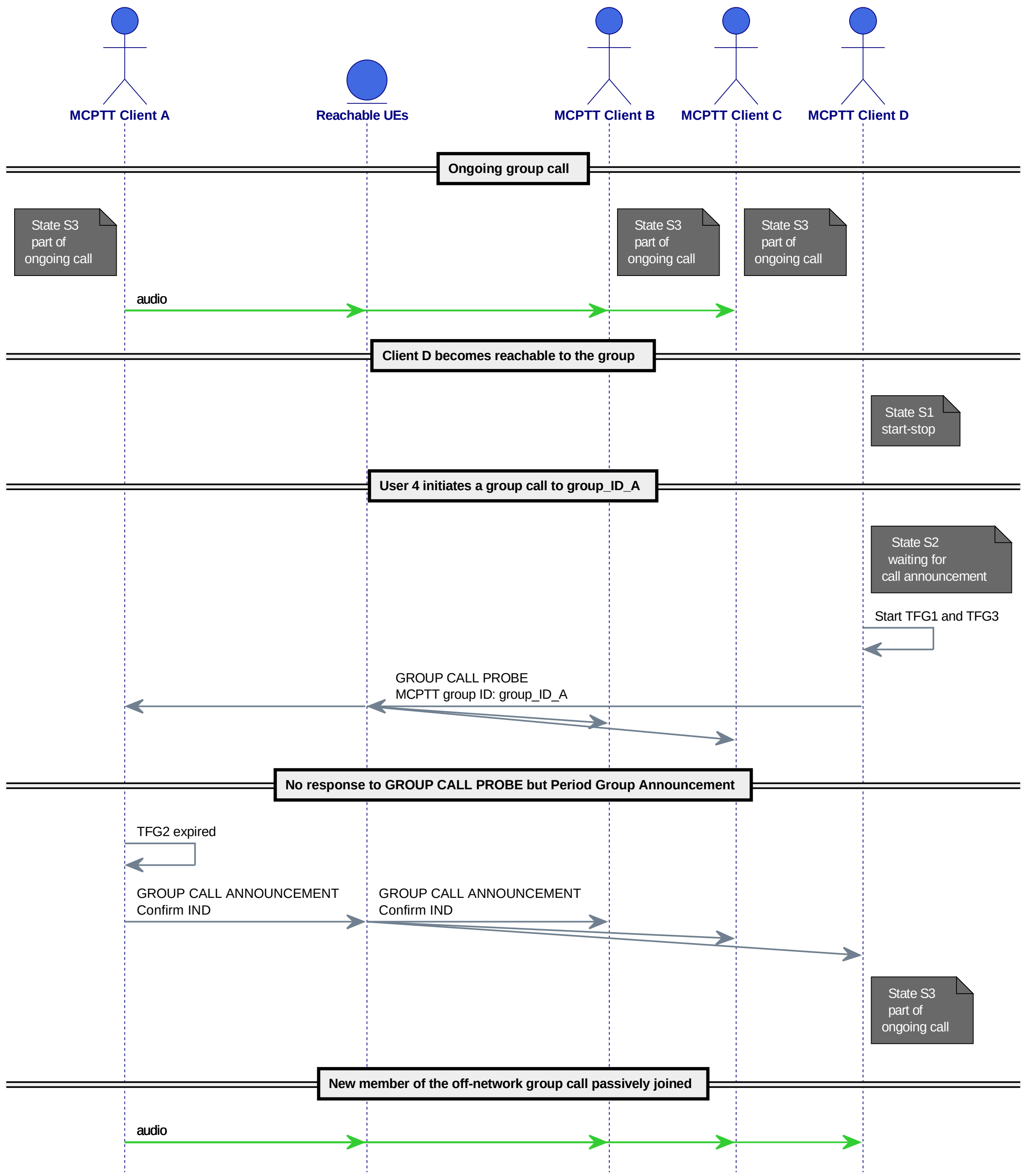

Figure 192: CONN-MCPTT/OFF/GROUP/04 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 206: CONN-MCPTT/OFF/GROUP/04

Interoperability Test Description			
Identifier	CONN-MCPTT/OFF/GROUP/04		
Test Objective	Verify the initiation of an off-network group call when there is an ongoing off-network group call to the same group id		
Configuration(s)	• CFG_OFF_GEN-1 (clause 5.5)		
References	• MONP (see ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_OFF-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_OFF-MCPTT-FC (clause 6.2)		
Pre-test conditions	• IP connectivity among the UEs of the specific scenario using any of the underlaying (layer 2) discovery and transmission mechanisms (including a newly arrived one), ongoing off-network group call with (or without) confirmation indication		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	UE 4 now in the coverage area where there is already an ongoing off-network group call tries to initiate a call to the same group id
	2	check	MCPTT client in UE 4 sends the CALL PROBE and enters S2
	3	check	CALL PROBE arrives at the other MCPTT clients that do not reply anything back and remain in S3 state
	4	check	Periodic GROUP CALL ANNOUNCEMENT message with confirm indication IE sent by User 1 to all the UEs (including the new one) under off-network coverage
	5	check	MCPTT Client in UE 4 in state S2 receives the message and enters S3 directly
	6	verify	Off-network group call stablished and media exchanged according to the media session definition in the original SDP

13.2.5 Leaving an on-going off-network group call [CONN-MCPTT/OFF/GROUP/05]

During an ongoing group call, according to clause 10.2.2.4.5.1 in ETSI TS 124 379 [9], when in the "S3: part of ongoing call" state (or S5 or S4), upon an indication from the MCPTT user to release the group call, the MCPTT client shall release the media session, stop the floor control state machine and the associated timers (depending on the state) and enter the "S6: ignoring incoming call announcements" state. Later on, according to clause 10.2.2.4.5.2, when in the "S6: ignoring incoming call announcements" state and upon receiving a GROUP CALL ANNOUNCEMENT message with the MCPTT group ID IE matching the stored MCPTT group ID of the call, the MCPTT client shall update the received status information of the call, restart TFG5 and remain in the "S6: ignoring incoming call announcements" state.

Message Sequence Diagram

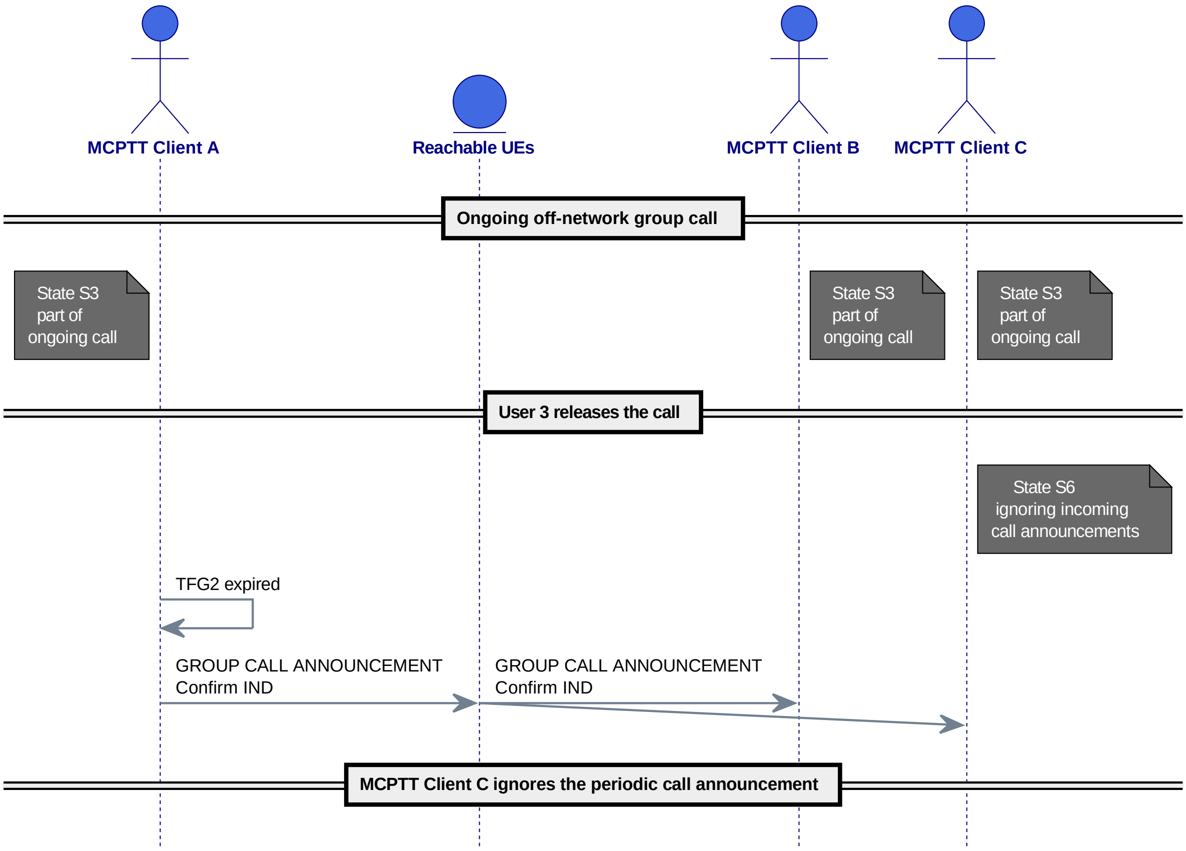

Figure 193: CONN-MCPTT/OFF/GROUP/05 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 207: CONN-MCPTT/OFF/GROUP/05

Interoperability Test Description			
Identifier	CONN-MCPTT/OFF/GROUP/05		
Test Objective	Verify the release of an ongoing off-network group call		
Configuration(s)	• CFG_OFF_GEN-1 (clause 5.5)		
References	• MONP (see ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_OFF-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_OFF-MCPTT-FC (clause 6.2)		
Pre-test conditions	• IP connectivity among the UEs of the specific scenario using any of the underlaying (layer 2) discovery and transmission mechanisms (including a newly arrived one), ongoing off-network group call		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User 3 releases the ongoing group calll
	2	check	MCPTT client C enters state S6 without any explicit notification to the group
	3	check	Periodic GROUP CALL ANNOUNCEMENT message with confirm indication IE sent by User 1 to all the UEs (including the new one) under off-network coverage
	4	check	MCPTT Client C ignores the GROUP CALL ANNOUNCEMENT and remains in state S6
	5	verify	Off-network group call terminated (media plane and floor control) by MCPTT ClIent C and User not notified upon new GROUP CALL ANNOUNCEMENT(s)

13.2.6 Merge of two off-network group calls [CONN-MCPTT/OFF/GROUP/06]

This test case covers the situation where two ongoing off-network group calls are taking place at the same time in different Layer 2 isolated coverage areas. When those areas partially/totally overlap, the ongoing calls will be merged (considering all the users actually in coverage).

According to clause 10.2.2.4.6.1 in ETSI TS 124 379 [9], when in the "S3: part of ongoing call" state the following conditions are met:

- the MCPTT Client receives a (periodic) GROUP CALL ANNOUNCEMENT message with the MCPTT group ID IE matching the stored MCPTT group ID of the ongoing call and

  1) a Originating MCPTT user ID IE different from the stored originating MCPTT user ID of the call; or

  2) a Call identifier IE different from the stored call identifier of the call and either of the following two conditions are met:

     ▪ the Call start time IE of the GROUP CALL ANNOUNCEMENT message being lower than the stored call start time of the call; or

     ▪ the Call start time IE of the GROUP CALL ANNOUNCEMENT message being equal to the stored call start time of the call; and

     ▪ the Call identifier IE of the GROUP CALL ANNOUNCEMENT message being lower than the stored call identifier of the call.

Then the MCPTT client will update the SDP and session information (call id, originating user id, call start time, etc.), adjust the media plane according, restart TFG2 and TFG6 timers and remain in the "S3: part of ongoing call" state with the new media definition.

Note that it is assumed that the stored current call type associated with the call type control state machine being equal to the Call type IE of the GROUP CALL ANNOUNCEMENT message.

Message Sequence Diagram

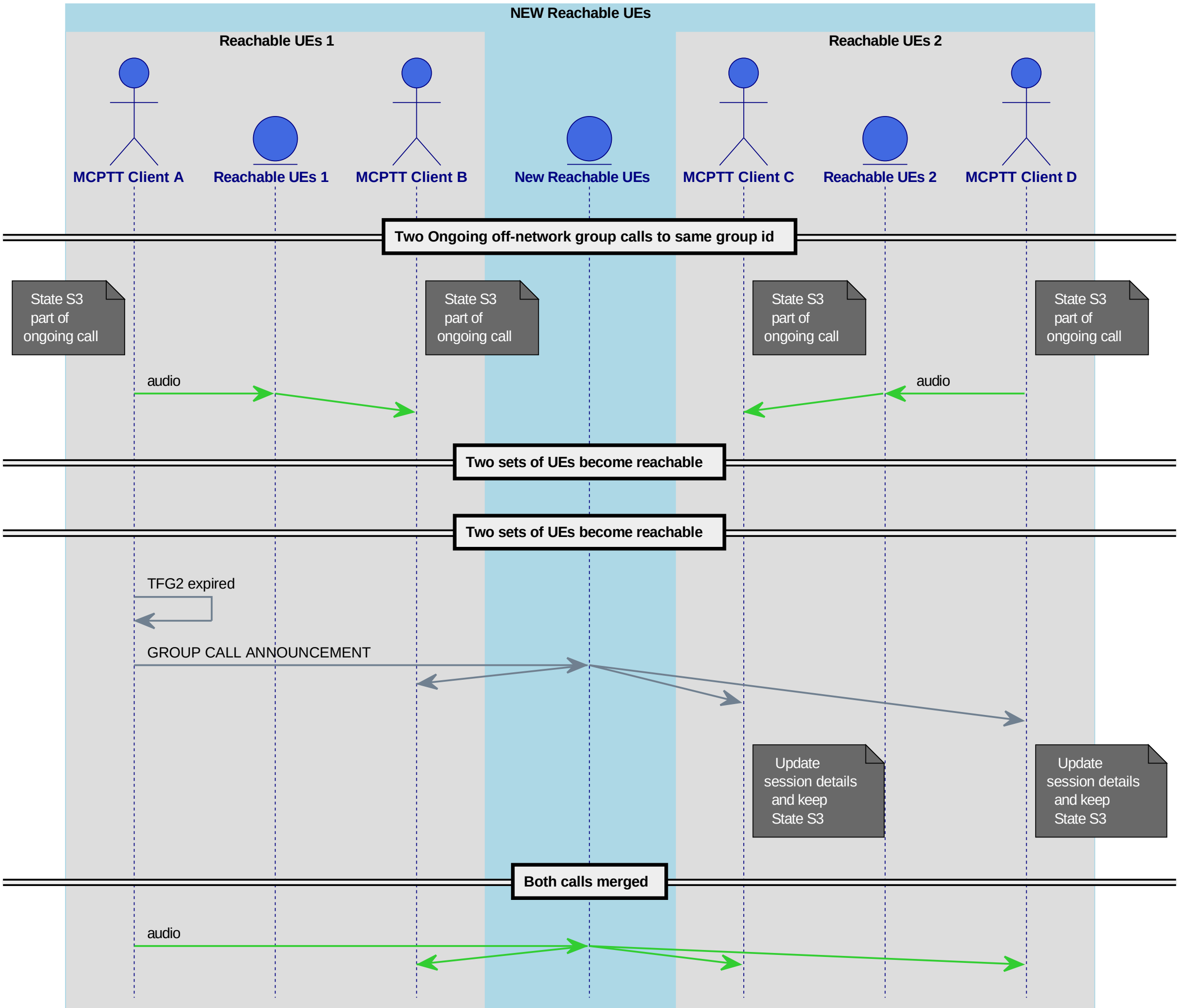

Figure 194: CONN-MCPTT/OFF/GROUP/06 Message Sequence

Message Details

`Trace Pending`

Interoperability Test Description

Table 208: CONN-MCPTT/OFF/GROUP/06

Interoperability Test Description			
Identifier	CONN-MCPTT/OFF/GROUP/06		
Test Objective	Verify the merging of two ongoing off-network group call		
Configuration(s)	• CFG_OFF_GEN-1 (clause 5.5)		
References	• MONP (see ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_OFF-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_OFF-MCPTT-FC (clause 6.2)		
Pre-test conditions	• IP connectivity among two different sets of UEs (initially in an isolated way, later together, using any of the underlaying -layer 2- discovery and transmission mechanisms), two ongoing off-network group calls with the same group id		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	Two subset of UEs in an ongoing off-network group call to the same group id become reachable to each other
	2	check	Upong TFG2 expiration in MCPTT Client A a periodic GROUP CALL ANNOUNCEMENT is sent and delivered to the new "super-set" of UEs now under L2 connectivity
	3	check	MCPTT Clients C and D check the SDP and session information of the incoming GROUP CALL ANNOUNCEMENT and decide to replace the session information of their ongoing group call with this one
	4	check	MCPTT Clients C and D remain in state S3 with the updated session information
	5	verify	A single (merged from previous two isolated ones) off-network group call covering all the UEs stablished

13.2.7 Initiation of an off-network private call in manual commencement mode [CONN-MCPTT/OFF/PRIV/01]

Similarly to [CONN-MCPTT/OFF/PRIV/01] this test case comprises the most basic setup of an off-network private call, while the whole off-network privcate calling arbitration logic is driven by the machine state in clause 11.2.2.2 in ETSI TS 124 379 [9], affecting all the off-network private calling test cases in this clause.

For the manual commencement mode, according to clause 11.2.2.4.2.1 in ETSI TS 124 379 [9] when in the "P0: start-stop" state (or "P1: ignoring same call id"), upon an indication from the MCPTT User to initiate an off-network private call, the MCPTT client shall generate and store the call identifier, store its own MCPTT user ID as caller ID and MCPTT user ID of the callee as callee ID, set the commencement mode to MANUAL COMMENCEMENT MODE, create an associated state matching and generate and send shall send the PRIVATE CALL SETUP REQUEST message towards other MCPTT client according to rules and procedures as specified in clause 11.2.1.1.1 with the proper keying material and SDP.

Then, the MCPTT client shall initialize the counter CFP1 (private call request retransmission) with the value set to 1, start timer TFP1 (private call request retransmission) and enter the "P2: waiting for call response" state.

The MCPTT client of the callee, as described in clause 11.2.2.4.4.1, upon receiving a PRIVATE CALL SETUP REQUEST message with Commencement mode IE set to "MANUAL COMMENCEMENT MODE" and Call identifier IE different from stored call identifier, shall store the received information (i.e. Call identifier, MCPTT user ID of the caller IE, as received in the PRIVATE CALL SETUP REQUEST as caller ID and somon) and send a PRIVATE CALL RINGING message in response to the request message according to rules and procedures as specified in clause 11.2.1.1.1. Then, he shall enter the "P5: pending" state.

The caller, according to clause 11.2.2.4.2.3 when in the "P2: waiting for call response" state and, upon receiving a PRIVATE CALL RINGING message, the MCPTT client, shall remain in the "P2: waiting for call response" state.

The MCPTT Client of the callee, according to clause 11.2.2.4.4.3, When in the "P5: pending" state, upon an indication from MCPTT User to accept the incoming private call, the MCPTT client will validate, process, convert and store the incoming information (including the keying material) to later generate and store answer SDP based on received SDP offer IE in PRIVATE CALL SETUP REQUEST message, as defined in clause 11.2.1.1.2 and finally generate a PRIVATE CALL ACCEPT message as specified in clause 15.1.7 (with the Call identifier IE set to the stored call identifier, the MCPTT user ID of the caller IE set to the stored caller ID, the MCPTT user ID of the callee IE set to the stored callee ID and the stored answer SDP as SDP).

It will then send the PRIVATE CALL ACCEPT message in response to the request message according to rules and procedures as specified in clause 11.2.1.1.1, stop timer TFP2 (waiting for user to respond) and start timer TFP4 (private call accept retransmission) set the counter CFP4 to 1 to finally remain in the"P5:pending"state.

The MCPTT Client of the caller (in the "P2: waiting for call response" state), according to the procedures in clause 11.2.2.4.2.8, upon receiving the PRIVATE CALL ACCEPT message response to the previous PRIVATE CALL SETUP REQUEST message with the same call identifier, will store the SDP answer IE received in the PRIVATE CALL ACCEPT message as answer SDP and generate a PRIVATE CALL ACCEPT ACK message as specified in clause 15.1.11 and send it according to rules and procedures as specified in clause 11.2.1.1.1.

It shall stop timers TFP1 and TFP9, start TFP5 (max duration), establish media session characteristics based on answer SDP, start floor control as originating floor participant and enter the "P4: part of ongoing call" state.

Finally, the MCPTT Client of the callee (in the "P5: pending" state), according to clause 11.2.2.4.4.5, upon receiving the PRIVATE CALL ACCEPT ACK message or RTP media from originating user, will stop timer TFP4 (private call accept retransmission) and start TFP5 (max duration), start floor control as terminating MCPTT client and finally enter the "P4: part of ongoing call" state.

Message Sequence Diagram

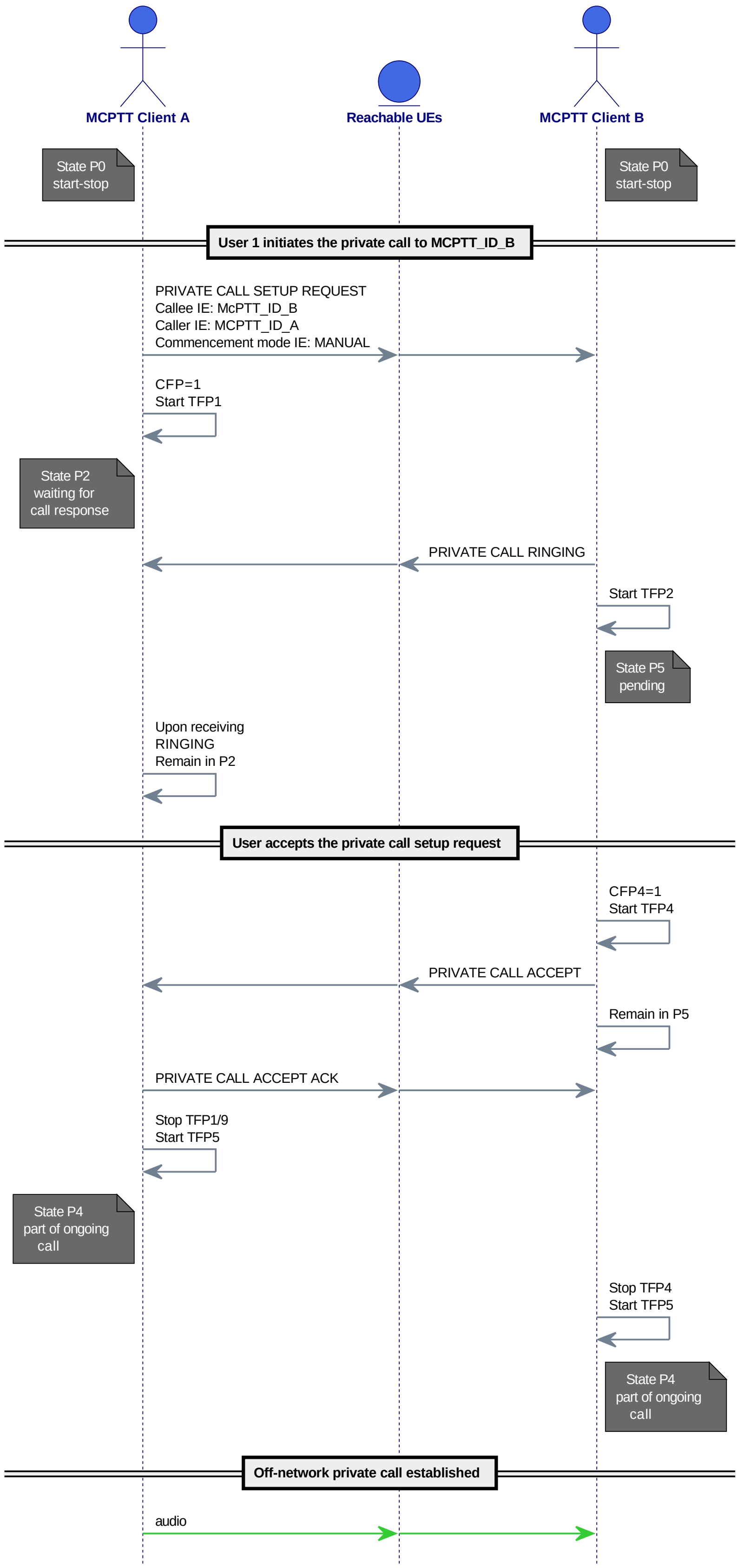

Figure 195: CONN-MCPTT/OFF/PRIV/01 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 209: CONN-MCPTT/OFF/PRIV/01

Interoperability Test Description			
Identifier	CONN-MCPTT/OFF/PRIV/01		
Test Objective	Verify an off-network private call in manual commencement mode		
Configuration(s)	• CFG_OFF_GEN-1 (clause 5.5)		
References	• MONP (see ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_OFF-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_OFF-MCPTT-FC (clause 6.2)		
Pre-test conditions	• IP connectivity between two UEs using any of the underlaying (layer 2) discovery and transmission mechanisms		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User in MCPTT Client A triggers the initiation of a private call to MCPTT_ID_B
	2	check	PRIVATE CALL SETUP REQUEST with Manual commencement mode arrives at MCPTT Client B
	3	check	MCPTT Client B processes the request, generates and sends a PRIVATE CALL RINGING message back and enters state P5, waiting for User 2 confirmation
	4	stimulust	User 2 takes the call
	5	check	MCPTT Client B generates a PRIVATE CALL ACCEPT and sends it back to Client A
	6	check	MCPTT Client A updates the SDP with the answer provided in the ACCEPTS sets the media paremeters and generates and send back a PRIVATE CALL ACCEPT ACK message
	5	verify	Both MCPTT Clients in P4 state, ongoing private call and proper media flow

13.2.8 Initiation of an off-network private call in automatic commencement mode [CONN-MCPTT/OFF/PRIV/02]

This test case is equivalent to [CONN-MCPTT/OFF/PRIV/02] but using the Automatic commencement mode. Therefore, in the initial PRIVATE CALL SETUP REQUEST, the Commencement mode IE will be set to "AUTOMATIC COMMENCEMENT MODE".

Then, according to clause 11.2.2.4.3.2 in ETSI TS 124 379 [9] the MCPTT client of the callee in the "P0: start-stop" state, upon receiving such a PRIVATE CALL SETUP REQUEST message with Commencement mode IE set to "AUTOMATIC COMMENCEMENT MODE" and Call identifier IE different than stored call identifier and media session declared in SDP body, will create the call type control state machine as described in clause 11.2.3.2, process the MIKEY-SAKKE_I_MESSAGE in case the SDP offer contains an "a=key-mgmt" attribute field with a"mikey" and will generate a PRIVATE CALL ACCEPT message as specified in clause 15.1.7 (i.e. with the Call identifier IE to the stored call identifier, the MCPTT user ID of the caller IE with stored caller ID and MCPTT user ID of the callee IE with stored callee ID) send it according to rules and procedures as specified in clause 11.2.1.1.1. Then it will directly initialize the counter CFP4 with value set to 1, start timer TFP4 (private call accept retransmission) and enter the "P5: pending" state.

Then, similarly to the previous test case and according to clause 11.2.2.4.2.8, when in the "P2: waiting for call response" state and upon receiving a PRIVATE CALL ACCEPT message response to PRIVATE CALL SETUP REQUEST message with the same call identifier, the MCPTT client of the caller will store the SDP answer IE received as answer SDP, generate a PRIVATE CALL ACCEPT ACK message as specified in clause 15.1.11 and finally shall start timer TFP5 (max duration); and enter the "P4: part of ongoing call" state.

Message Sequence Diagram

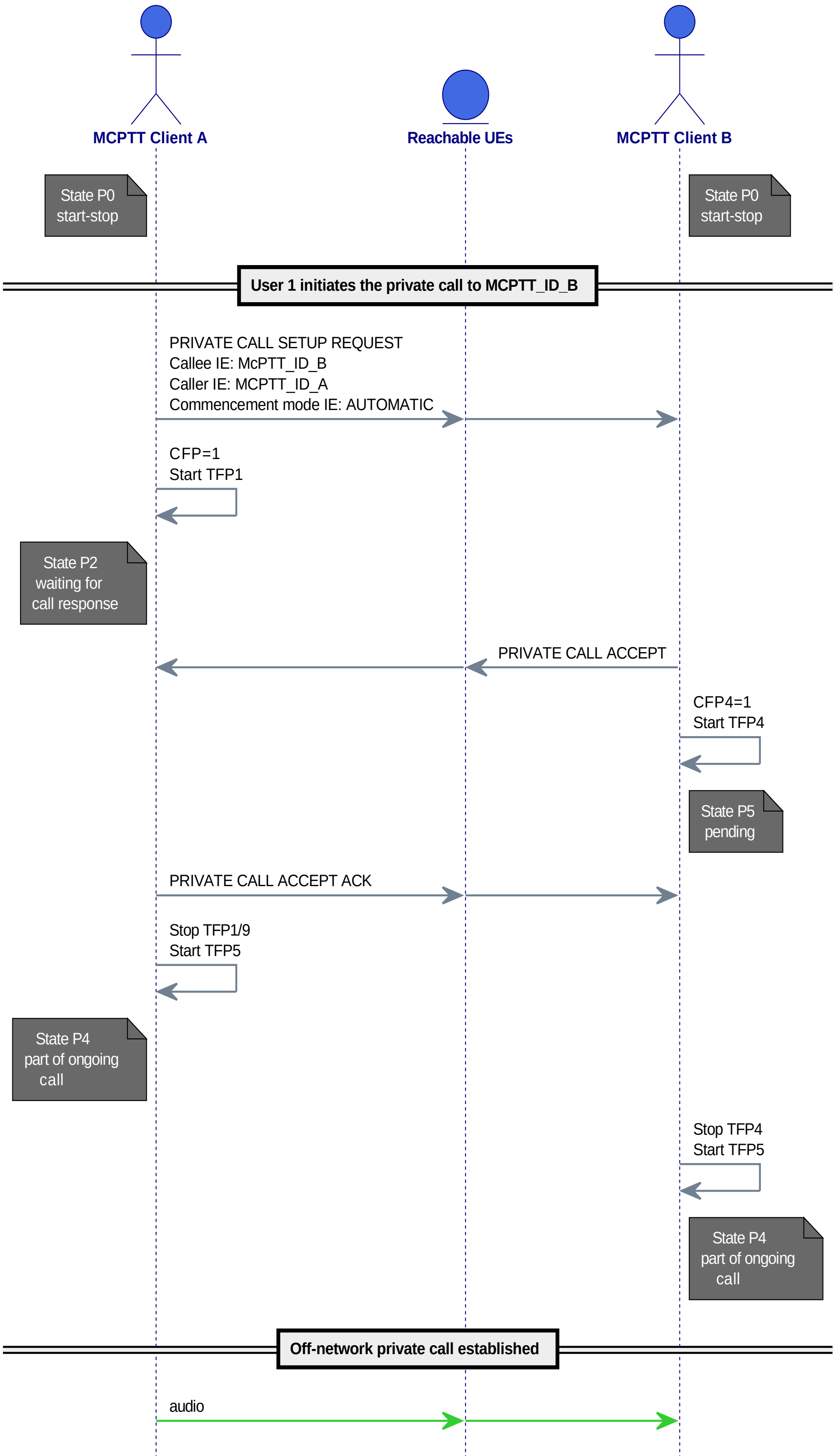

Figure 196: CONN-MCPTT/OFF/PRIV/02 Message Sequence

Message Details

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Trace Pending
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Interoperability Test Description

Table 210: CONN-MCPTT/OFF/PRIV/02

Interoperability Test Description			
Identifier	CONN-MCPTT/OFF/PRIV/02		
Test Objective	Verify an off-network private call in automatic commencement mode		
Configuration(s)	• CFG_OFF_GEN-1 (clause 5.5)		
References	• MONP (see ETSI TS 124 379 [9]) • MCPT (see ETSI TS 124 380 [10] and other references in ETSI TS 124 379 [9]) • RTP (see ETSI TS 124 229 [6] and other references in ETSI TS 124 379 [9])		
Applicability	• MCPTT-Client_OFF-MCPTT-CALL, MCPTT-Client_AMR-WB • MCPTT-Client_OFF-MCPTT-FC (clause 6.2)		
Pre-test conditions	• IP connectivity between two UEs using any of the underlaying (layer 2) discovery and transmission mechanisms		
Test Sequence	**Step**	**Type**	**Description**
	1	stimulus	User in MCPTT Client A triggers the initiation of a private call to MCPTT_ID_B
	2	check	PRIVATE CALL SETUP REQUEST with Automatic commencement mode arrives at MCPTT Client B
	3	check	MCPTT Client B generates a PRIVATE CALL ACCEPT and sends it back to Client A
	4	check	MCPTT Client A updates the SDP with the answer provided in the ACCEPTS sets the media paremeters and generates and send back a PRIVATE CALL ACCEPT ACK message
	5	verify	Both MCPTT Clients in P4 state, ongoing private call and proper media flow

Annex A (informative): Bibliography

- 3GPP TR 23.779 (V17.10.0): "Study on application architecture to support Mission Critical Push To Talk over LTE (MCPTT) services (Release 17)", September 2023.
- ETSI TR 124 980 (V16.0.0): "LTE; Minimum Requirements for support of MCPTT Service over the Gm reference point (3GPP TR 24.980 version 16.0.0 Release 16)".
- 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 (V17.1.0): "LTE; Universal Mobile Telecommunications System (UMTS); Diameter data management applications (3GPP TS 29.283 version 17.1.0 Release 17)".
- ETSI TS 123 468 (V17.0.0): "LTE; Group Communication System Enablers for LTE (GCSE-LTE); Stage 2 (3GPP TS 23.468 version 17.0.0 Release 17)".
- ETSI TS 124 483 (V17.7.0): "LTE; Mission Critical Services (MCS) Management Object (MO) (3GPP TS 24.483 version 17.7.0 Release 17)".

History

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