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**TECHNICAL SPECIFICATION**

**Digital cellular telecommunications system (Phase 2+) (GSM);
Universal Mobile Telecommunications System (UMTS);
Multimedia Resource Function Controller (MRFC) -
Multimedia Resource Function Processor (MRFP)
Mp interface;
Stage 3
(3GPP TS 29.333 version 13.4.0 Release 13)**

**GLOBAL SYSTEM FOR MOBILE COMMUNICATIONS**

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# Contents

# Foreword

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# 1 Scope

The present document describes the protocol to be used on the Multimedia Resource Function Controller (MRFC) – Multimedia Resource Function Processor (MRFP) interface (Mp interface). The IMS architecture is described in 3GPP TS 23.228 [1], the functional requirements are described in 3G TS 23.333 [25]

This specification defines a profile of the Gateway Control Protocol (H.248.1), for controlling Multimedia Resource Function Processor supporting in-band user interaction, conferencing and transcoding for multimedia-services.

The present document is valid for a 3rd generation PLMN (UMTS) complying with Release 7 and later.

# 2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

| [1] | 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2". |
|---|---|
| [2] | 3GPP TS 23.002: "Network architecture". |
| [3] | ITU-T Recommendation H.248.1 (05/2002), Gateway control protocol: Version 2 + Corrigendum 1 (03/2004) and ITU-T Recommendation H.248.1 (09/2005), Gateway control protocol: Version 3 for Floor Control requirements. |
| [4] | ITU-T Recommendation H.248.4 (11/2000), Gateway control protocol: Transport over Stream Control Transmission Protocol (SCTP) + Corrigendum 1 (03/2004). |
| [5] | ITU-T Recommendation H.248.7 (03/2004), Gateway control protocol: Generic announcement package. |
| [6] | ITU-T Recommendation H.248.9 (03/2002), Gateway control protocol: Advanced media server package. |
| [7] | ITU-T Recommendation H.248.11 (11/2002), Gateway control protocol: Media gateway overload control package. |
| [8] | IETF RFC 2960: "Stream Control Transmission Protocol". |
| [9] | ITU-T Recommendation H.248.14 (03/2002), Gateway control protocol: Inactivity timer package. |
| [10] | ITU-T Recommendation H.248.16 (11/2002), Gateway control protocol: Enhanced digit collection packages and procedures + Corrigendum 1 (03/2004). |
| [11] | ITU-T Recommendation H.248.19 (03/2004) Gateway control protocol: Decomposed Multipoint Control Unit, Audio, Video and Data Conferencing package |
| [12] | ITU-T Recommendation H.248.27 (07/2003), Gateway control protocol: Supplemental Tones package |
| [13] | ITU-T Recommendation Q.1950 (12/2002), Bearer independent call bearer control protocol. |
| [14] | ITU-T Recommendation G.711 (11/1988), Pulse code modulation (PCM) of voice frequencies. |

[15]     ITU-T Recommendation G.711 Appendix I (09/1999), A high quality low-complexity algorithm for packet loss concealment with G.711.

[16]     ITU-T Recommendation G.711 Appendix I (09/1999), A comfort noise payload definition for ITU-T G.711 use in packet-based multimedia communication systems.

[17]     ITU-T Recommendation E.180 (03/1998), Technical characteristics of tones for the telephone service.

[18]     TS 183 022: Telecommunication and Internet converged Services and Protocols for Advanced Networking (TISPAN); MGC Information Package.

[19]     ES 201 970 Access and Terminals (AT); Public Switched Telephone Networks (PSTN); Harmonized specification of physical and electrical characteristics at a 2-wire analogue presented Network Temination Point (NTP).

[20]     IETF RFC 2327 (1998): "SDP: Session Description Protocol".

[21]     IETF RFC 3551 (2003): "RTP Profile for Audio and Video Conferences with Minimal Control".

[22]     IETF RFC 2833 (2000): "RTP Payload for DTMF Digits, Telephony Tones and Telephony Signals".

[23]     IETF RFC 4040 (2005): "RTP payload format for a 64 kbit/s transparent call".

[24]     IETF RFC 3555 (2003): "MIME Type Registration of RTP Payload Formats".

[25]     3GPP TS 23.333: "Multimedia Resource Function Controller (MRFC) – Multimedia Resource Function Processor (MRFP) Mp interface: Procedures Descriptions".

[26]     ITU-T Recommendation H.248.9a1 (03/2007), "Gateway control protocol: Advanced media server package (draft work in progress)".

[27]     3GPP TS 29.163: "Interworking between the IM CN subsystem and CS networks – Stage 3".

[28]     W3C Recommendation (September 2004): "Speech Synthesis Markup Language (SSML) Version 1.0".

[29]     W3C Recommendation (September 2004): "Speech Recognition Grammar Specification (SRGS) Version 1.0".

[30]     ITU-T Recommendation H.248.36 (09/2005): "Hanging Termination Detection Package".

[31]     Void

[32]     IETF RFC 4583 (2006): "Session Description Protocol (SDP) Format for Binary Floor Control Protocol (BFCP) Streams".

[33]     ITU-T H.248.19 Ammendment 2 (02/2009): "Gateway Control Protocol: Decomposed multipoint control unit, audio, video and data conferencing packages: Floor Control Enhancements".

[34]     IETF RFC 4975 (2007): "The Message Session Relay Protocol (MSRP)".

[35]     ITU-T H.248.69 (03/2009): "Gateway control protocol: Packages for interworking between MSRP and H.248".

[36]     Void

[37]     Void

[38]     Void

[39]     IETF RFC 4145 (2005): "TCP-Based Media Transport in the Session Description Protocol (SDP)".

[40]     IETF RFC 4585 (2006): "Extended RTP Profile for Real-time Transport Control Protocol (RTCP) - Based Feedback (RTP/AVPF)".

[41]     3GPP TS 26.114: "IP Multimedia Subsystem (IMS); Multimedia Telephony; Media handling and interaction".

[42]     3GPP TS 22.153: "Multimedia Priority Service".

[43]     ITU-T Recommendation H.248.52 (06/2008): "Gateway control protocol: QoS support packages".

[44]     ITU-T Recommendation H.248.82 (03/2013): "Gateway control protocol: Explicit Congestion Notification Support".

[45]     IETF RFC 5285: "A General Mechanism for RTP Header Extensions".

[46]     IETF RFC 6236: "Negotiation of Generic Image Attributes in the Session Description Protocol (SDP)".

[47]     ITU-T Recommendation H.248.50 (2010) and Corrigendum 1 (02/12): "Gateway control protocol: NAT traversal toolkit packages".

[48]     IETF RFC 5245: "Interactive Connectivity Establishment (ICE): A Protocol for Network Address Translator (NAT) Traversal for Offer/Answer Protocols".

[49]     3GPP TS 24.229: "IP Multimedia Call Control Protocol based on SIP and SDP".

[50]     3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[51]     IETF RFC 3830: "MIKEY: Multimedia Internet KEYing".

[52]     IETF RFC 793: "Transmission Control Protocol - DARPA Internet Program - Protocol Specification".

[53]     IETF RFC 4582: "The Binary Floor Control Protocol (BFCP)".

[54]     ITU-T Recommendation H.248.89 (10/2014): "Gateway control protocol: TCP support packages".

[55]     ITU-T Recommendation H.248.90 (10/2014): "Gateway control protocol: H.248 packages for control of transport security using TLS".

[56]     IETF RFC 6043: "MIKEY-TICKET: Ticket-Based Modes of Key Distribution in Multimedia Internet KEYing (MIKEY)".

[57]     3GPP TS 33.328: "IP Multimedia Subsystem (IMS) media plane security".

[58]     IETF RFC 4279: "Pre-Shared Key Ciphersuites for Transport Layer Security (TLS)".

[59]     3GPP TS 33.310: "Network Domain Security (NDS); Authentication Framework (AF)".

[60]     3GPP TS 24.103: "Telepresence using the IP Multimedia (IM) Core Network (CN) Subsystem (IMS); Stage 3".

[61]     IETF draft-ietf-mmusic-sctp-sdp-26: "Session Description Protocol (SDP) Offer/Answer Procedures For Stream Control Transmission Protocol (SCTP) over Datagram Transport Layer Security (DTLS) Transport".

Editor's Note: The above document cannot be formally referenced until it is published as an RFC.

[62]     IETF draft-ietf-mmusic-data-channel-sdpneg-06: "SDP-based Data Channel Negotiation".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

[63]     ITU-T Recommendation H.248.93 (10/2014): "Gateway control protocol: ITU-T H.248 support for control of transport security using the datagram transport layer security (DTLS) protocol".

[64]     IETF RFC 8122: "Connection-Oriented Media Transport over the Transport Layer Security (TLS) Protocol in the Session Description Protocol (SDP)".

[65]     Draft ITU-T Recommendation H.248.78 (02/2015): "Gateway control protocol: Bearer-level message backhauling and application level gateway".

Editor's Note: The above document cannot be formally referenced until it is published as an ITU-T Recommendation. The latest output draft of the revised ITU-T Recommendation H.248.78 is available from the following link: http://wftp3.itu.int/av-arch/avc-site/2013-2016/1502_Gen/H248_78rev.zip

[66]     IETF RFC 4573: "MIME Type Registration for RTP Payload Format for H.224".

[67]     ITU-T Recommendation H.224 (01/2005): "A real time control protocol for simplex applications using the H.221 LSD/HSD/MLP channels".

[68]     ITU-T Recommendation H.281 (11/1994): "A far end camera control protocol for videoconferences using H.224".

[69]     IETF RFC 5939: "Session Description Protocol (SDP) Capability Negotiation".

[70]     ITU-T Recommendation H.248.80 (01/2014): "Gateway control protocol: Usage of the revised SDP offer/answer model with ITU-T H.248".

# 3     Definitions and symbols

## 3.1     Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [50] and the following apply.

**Media Gateway:** See ITU-T Recommendation H.248.1 [3].

**Media Gateway Controller:** See ITU-T Recommendation H.248.1 [3].

**MultiMedia Resource Function Controller:** See 3GPP TS 23.002 [2].

**MultiMedia Resource Function Processor**: See 3GPP TS 23.002 [2].

For the purposes of the present document, the following terms and definitions as defined in 3GPP TS 23.333 [25] apply:

ICE lite

Full ICE.

For the purposes of the present document, the following terms and definitions given in IETF RFC 3830 [51] apply:

   **Crypto Session (CS)**
   **Traffic-Encrypting Key (TEK).**

## 3.2     Symbols

None.

# 4.  Abbreviations

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

   BFCP         Binary Floor Control Protocol
   CDR          Call Data Record
   CN           Comfort Noise
   CRC          Cyclic Redundancy Check
   CS           Crypto Session
   CVO          Coordination of Video Orientation
   DNS          Domain Name System
   DTLS         Datagram Transport Layer Security

| | |
|---|---|
| DTMF | Dual Tone Multi Frequency |
| CE | Congestion Experienced |
| ECN | Explicit Congestion Notification |
| FEC | Forward Error Correction |
| FECC | Far End Camera Control |
| ICE | Interactive Connectivity Establishment |
| IP | Internet Protocol |
| IPsec | IP Security |
| MGC | Media Gateway Controller |
| MGW | Media Gateway |
| MID | Message Identifier |
| MPS | Multimedia Priority Service |
| MRFC | MultiMedia Resource Function Controller |
| MRFP | MultiMedia Resource Function Processor |
| MSRP | Message Session Relay Protocol |
| OAM | Operation, Administration and Maintenance |
| OoS | Out of Service |
| PLC | Packet Loss Concealment |
| PSK | Pre-Shared Key |
| PT | Payload Type |
| QoS | Quality of Service |
| ROI | Region of Interest |
| SCTP | Stream Control Transmission Protocol |
| SDP | Session Description Protocol |
| SDPCapNeg | SDP Capability Negotiation |
| SPNE | Signal Processing Network Equipment |
| SSRC | Synchronisation Source |
| STUN | Session Traversal Utilities for NAT |
| TCP | Transmission Control Protocol |
| TEK | Traffic-Encrypting Key |
| TLS | Transport Layer Security |
| TTL | Time To Live |
| UDP | User Datagram Protocol |
| URN | Uniform Resource Name |
| VBD | Voiceband Data |

# 5 Profile Description

## 5.1 Profile Identification

The name and version of the profile that is sent in the service change command are:

**Table 5.1.1: Profile Identification**

| Profile name: | MRF |
|---|---|
| **Version:** | 5 |

## 5.2 Summary

The profile defined in the present document enables the control of media resource function processors (MRFP) supporting in-band user interaction, conferencing and transcoding for multimedia services.

This Profile describes the minimum mandatory settings and procedures required to fulfil the Media Gateway control requirements for the MRF.

In addition optional settings and procedures are described which fulfil optional features and where supported, the minimum mandatory settings within the optional procedures and packages are identified that must be supported in order to support that feature.

"Optional" or "O" means that it is optional for either the sender or the receiver to implement an element. If the receiving entity receives an optional element that it has not implemented it should send an Error Code (e.g. 445 "Unsupported or Unknown Property", 501"Not Implemented", etc.). "Mandatory" or "M" means that it is mandatory for the receiver to implement an element. Whether it is mandatory for the sender to implement depends on specific functions; detail of whether elements of the core protocol are mandatory to be sent are defined in the stage 2 procedures, stage 3 procedures and/or the descriptions of individual packages.

The setting or modification of elements described in the profile under the heading "Used in Command" has the meaning that the property can be set/modified with that command. The property may be present in other commands (in order to preserve its value in accordance with ITU-T H.248.1[3]) when those commands are used for other procedures that affect the same descriptor.

This profile supports Explicit Congestion Notification and Multimedia Priority Service.

# 5.3 Gateway Control Protocol Version

**Version 2** shall be the minimum version supported. Support of this version implies conformance to ITU-T Recommendation H.248 Version 2 [3].

**Version 3** shall be supported for the optional MRFP based Floor Control Server functionality.

# 5.4 Connection Model

Media Resource Function Processors shall support ephemeral terminations that sink and source IP traffic. This type of H.248 Termination is denoted IP in the following clauses.

**Table 5.4.1: Connection Model**

| Maximum number of contexts: | Provisioned (NOTE 1) |
|---|---|
| Maximum number of terminations per context: | Unspecified(NOTE 2) |
| Allowed terminations type combinations in a context: | Not Applicable |
| NOTE 1: The actual number of supported contexts can be audited by the MRFC using the MaxNrOfContexts property defined in the Base Root Package. | |
| NOTE 2: Support of 1 termination in a context is the basic requirement for the MRFP e.g. for voice record. 2 terminations in a context are required for transcoding or any inband media detection or insertion whilst an unspecified number terminations may be required if conferencing is supported. | |

## 5.5 Context Attributes

**Table 5.5.1: Context Attributes**

| Context Attribute | Supported | Values Supported |
|---|---|---|
| Topology | Yes | See § 5.7.8 |
| Priority Indicator | Optional (NOTE 1) | 0-15 (NOTE 2) |
| Emergency Indicator | No | Not Applicable |
| IEPS Indicator | No | |
| ContextAttribute Descriptor | Yes | If "yes" see clause 5.8.9 for details of supported attributes |
| ContextIDList Parameter | <Yes/No> | NA |
| NOTE 1: This Context Attribute parameter is used for MPS as specified in 3GPP TS 22.153 [42]. | | |
| NOTE 2: Priority values 11 – 15 of the Priority Indicator are reserved for MPS. | | |

Is the AND/OR Select operation Context Attribute supported?

| **AND/OR Context Attribute** | <Yes/No> | <AND/OR/BOTH> |
|---|---|---|

# 5.6 Terminations

## 5.6.1 Termination Names

### 5.6.1.1 General

The Termination ID structure is provisioned in the MRFC and MRFP and is known by the MRFP and the MRFC at or before start up.

With ephemeral IP endpoint bearer types the internal structure of Termination ID is irrelevant for MRFC and MRFP and therefore Termination ID is only a numeric identifier for the termination.

### 5.6.1.2 ASN.1 encoding

The following general structure of TerminationID shall be used:

4 octets shall be used for the termination ID. The following defines the general structure for the termination ID:

**Table 5.6.1.2.1: Termination ID**

| Termination type | X |
|---|---|

Termination type:

Length 3 bits

Values:

000 Reserved

001 Ephemeral termination

011 - 110 Reserved

111 Reserved for ROOT termination Id (ROOT Termination Id = 0xFFFFFFFF)

X:

Length 29 bits.

For IP termination, its usage is un-specified.

### 5.6.1.3 ABNF encoding

The following general structure of termination ID shall be used:

TerminationID = "ROOT" / pathName / "$" / "*" ; according to ITU-T H.248.1 [3] Annex B.

## 5.6.2  Multiplexed Terminations

**Table 5.6.2.1: Multiplexed Terminations**

| Multiplex Terminations Supported? | NO |
|---|---|

# 5.7      Descriptors

## 5.7.1      Stream Descriptor

**Table 5.7.1.1: Stream Descriptor**

| Maximum number of streams per termination type | ALL | Unspecified (NOTE) |
|---|---|---|
| NOTE:      At least 1 stream for each media  (e.g. video+audio = 2 streams). If only one stream is applicable, then the MRFC may omit the Stream Descriptor and the MRFP shall assume that StreamID =1. | | |

### 5.7.1.1      LocalControl Descriptor

The following tables specify the level of support required with regard to the properties in the local control descriptor.

**Table 5.7.1.1.1: Reserve Group and Reserve Value**

| | | Termination Type | Stream Type |
|---|---|---|---|
| **Reserve group used:** | NO (NOTE 1) | - | - |
| **Reserve value used:** | YES (NOTE 2) (NOTE 3) | IP | Audio, Video |
| NOTE 1:  Support of Reserve Group in case of multiple p-time values requires further studies | | | |
| NOTE 2:  Used for audio streams where IETF RFC 2833 [22] is also specified and for conference where participants are invited to join the conference. | | | |
| NOTE 3:  Not used for TCP transport (see IETF RFC 793 [52]) and media types: a) "message" for MSRP (see IETF RFC 4975 [34]) and b) "application" for BFCP (see IETF RFC 4582 [53]) and ROI FECC (IETF RFC 4573 [66]) because the application control will not use them in a context ReserveValue. | | | |

**Table 5.7.1.1.2: Stream Mode**

| Termination Type | Stream Type | Allowed StreamMode Values |
|---|---|---|
| ALL except ROOT | Any | Send, Receive, Send and Receive, Inactive |

## 5.7.2 Events Descriptor

**Table 5.7.2.1: Events Descriptor**

| Events settable on termination types and stream types: | Yes | | |
|---|---|---|---|
| *If yes* | **Event ID** | **Termination Type** | **Stream Type** |
| | g/* | IP | Audio, Video |
| | nt/* | IP | Audio, Video |
| | rtp/* | IP | Audio, Video |
| | aasrec/* | IP | Audio, Video |
| | aasb/* | IP | Audio, Video |
| | dd/d0-dd | IP | Audio |
| | it/* | ROOT | Not Applicable |
| | ocp/mg_overload | ROOT | Not Applicable |
| | aastts/* | IP | Audio |
| | asr/* | IP | Audio |
| | mrp/* | IP | Audio, Video |
| | mpp/* | IP | Audio, Video |
| | vavsp/* | IP | Audio, Video |
| | Hangterm/thb | IP | Audio, Video |
| | msrpstat/mquota | IP | Message |
| | mess/* | IP | Message |
| | fschp/* | IP | Audio, Video |
| | ECN Failure (ecnrous/fail, 0x010b/0x0001) see sub-clause 5.14.3.37 | IP | Audio, Video |
| | ICE New Peer Reflexive Candidate (ostuncc/nprc, 0x00c3/0x0002) – See subclause 5.14.3.40 | IP | Any, only applicable for full ICE |
| | ICE Connectivity Check Result (ostuncc/ccr, 0x00c3/0x0001) – See subclause 5.14.3.40 | IP | Any, only applicable for full ICE |
| | TCP connection state change ("BNC change") (tcpbcc/BNCChange, 0x0115/0x0001) see subclause 5.14.3.41 | IP | TCP based |
| | TLS session state change ("BNC change") (tlsbsc/BNCChange, 0x0117/0x0001) see subclause 5.14.3.42 | IP | TLS based |
| | Detect bearer level message (mcbalg/det, 0x0108/0x0001) – See subclause 5.14.3.43 | IP | Application |

**Table 5.7.2.2: Event Buffer Control**

| Event Buffer Control used: | No |
|---|---|

**Table 5.7.2.3: Keep Active**

| Keepactive used on events: | Yes |
|---|---|

**Table 5.7.2.4: Embedding in event**

| Embedded events in an event descriptor: | No |
|---|---|
| Embedded signals in an event descriptor: | No |

**Table 5.7.2.5: Notify Behaviour**

| NotifyBehaviour used on events: | | No |
|---|---|---|
| *If yes* | **Supported values** | Not Applicable |

## 5.7.3      EventBuffer Descriptor

**Table 5.7.3.1: Event Buffer**

| Event Buffer descriptor used: | No | |
|---|---|---|
| | | |

## 5.7.4      Signals Descriptor

**Table 5.7.4.1: Signals dependant on termination or streams**

| Signals settable dependant on termination or streams types: | Yes | | |
|---|---|---|---|
| *If yes* | **Signal ID** | **Termination Type** | **Stream Type / ID** |
| | cg/* | IP | Audio |
| | srvtn/* | IP | Audio |
| | xcg/* | IP | Audio |
| | an/apf | IP | Audio, video |
| | int/* | IP | Audio |
| | biztn/* | IP | Audio |
| | aasrec/* | IP | Audio, video |
| | Aasdc | IP | Audio, video |
| | aasb/* | IP | Audio, video |
| | conftn/* | All except ROOT | Audio |
| | Tonegen/* | IP | Audio |
| | bcg/* | IP | Audio |
| | aastts/* | IP | Audio |
| | asr/* | IP | Audio |
| | mrp/* | IP | Audio, video |
| | mpp/* | IP | Audio, video |
| | mess/* | IP | Message |
| | recmess/* | IP | Message |
| | fschp/* | IP | Audio, video |
| | Send Additional Connectivity Check (ostuncc/sacc, 0x00c3/0x0002) | IP | Message, audio, video, only applicable for full ICE |
| | Send Connectivity Check (ostuncc/scc, 0x00c3/0x0001) | IP | Message, audio, video, only applicable for full ICE |
| | Establish BNC (tcpbcc/EstBNC, 0x0115/0x0001) | IP | TCP based |
| | Release BNC (tcpbcc/RelBNC, 0x0115/0x0002) | IP | TCP based |
| | Establish BNC (tlsbsc/EstBNC, 0x0117/0x0001) | IP | TLS based |
| | Release BNC (tlsbsc/RelBNC, 0x0117/0x0002) | IP | TLS based |
| | Send bearer level message (mcbalg/sblm, 0x0108/0x0001) – See subclause 5.14.3.43 | IP | Application |

**Table 5.7.4.2: Signal Lists**

| Signals Lists supported: | Yes | |
|---|---|---|
| *If yes* | Termination Type Supporting Lists | IP |
| | Stream Type Supporting lists | Audio, Video |
| | **Maximum number of signals per signal list** | Provisioned |

**Table 5.7.4.3: Signal type and duration**

| Signal type and duration supported? | Yes | |
|---|---|---|
| *If yes* | **Signal ID** | **Type or duration override** |
| | ALL | Both |

**Table 5.7.4.4: Signal Direction**

| Signal Direction supported: | No |
|---|---|

**Table 5.7.4.5: Notify completion**

| Notify completion supported: | Yes | |
|---|---|---|
| *If yes* | **Signal ID** | **Type of completion supported** |
| | cg/*, svrtn/*, xcg/*, an/*, int/*, biztn/*, conftn/* , tonegen/*, bcg/*, aasb/*, aastts/*, mpp/*, fschp/* | ALL |

**Table 5.7.4.6: RequestID Parameter**

| RequestID Parameter Supported: | Yes |
|---|---|

**Table 5.7.4.7: Signals played simultaneously**

| Signals played simultaneously: | No (NOTE) | |
|---|---|---|
| *If yes* | **Signal Ids that can be played simultaneously:** | - |
| NOTE: Signal for recording audio or multimedia may be played simultaneously with signals for playing announcement. | | |

**Table 5.7.4.8: Keep Active**

| Keepactive used on signals: | Yes |
|---|---|

## 5.7.5 DigitMap Descriptor

**Table 5.7.5.1: DigitMap Descriptor**

| DigitMaps supported: | NO | | |
|---|---|---|---|
| *If yes* | **DigitMap Name** | **Structure** | **Timers** |
| | | | |

### 5.7.6 Statistics Descriptor

**Table 5.7.6.1: Statistics Descriptor**

| Statistics supported on: | Both |
|---|---|

**Table 5.7.6.2: Statistics reported on Subtract**

| Statistics reported on Subtract: | | Yes | |
|---|---|---|---|
| *If yes* | **Statistic IDs Reported** | **Termination Type** | **Stream Type** |
| | msrpstat/* | IP | Message |

### 5.7.7 ObservedEvents Descriptor

**Table 5.7.7.1: ObservedEvents Descriptor**

| Event detection time supported: | Yes |
|---|---|

### 5.7.8 Topology Descriptor

**Table 5.7.8.1: Topology Descriptor**

| Allowed triples: | (T1,T2, isolate) (T1,T2, oneway) (T1,T2, bothway) |
|---|---|

### 5.7.9 Error Descriptor

**Table 5.7.9.1: Error codes sent by the MRFC**

| Supported H.248.8 Error Codes: | 400-403, 406, 410, 411, 421, 422, 430, 431, 442, 443, 444, 446, 458, 501-506, 533 |
|---|---|
| Supported Error Codes defined in packages: | All error codes defined in supported packages are supported. |

**Table 5.7.9.2: Error codes sent by the MRFP**

| Supported H.248.8 Error Codes: | 400-411, 412, 421,422,430, 431, 432-435,440,441,442, 471, 500-517, 522-539. |
|---|---|
| Supported Error Codes defined in packages: | All error codes defined in supported packages are supported. |

## 5.8 Command API

### 5.8.1 Add

**Table 5.8.1.1: Descriptors used by Add request**

| Descriptors used by Add request: | - Events, Signals, Media (TerminationState, LocalControl, Local and Remote) |
|---|---|

**Table 5.8.1.2: Descriptors used by Add reply**

| Descriptors used by Add reply: | Events, Signals, Media (TerminationState, LocalControl, Local and Remote)Error<br><br>When command request excludes an Audit Descriptor, the MGW response shall only include descriptors which contained underspecified or overspecified properties in the command request. Furthermore, only those properties that were underspecified or overspecified in the request shall be sent in the reply. Exceptions to this rule are:<br>- The Error Descriptor<br>- SDP properties returned in "Reserve IMS Resources" and "Reserve and Configure IMS Resources" procedures, as specified in 15.17.2.2 and 15.17.2.4 |
|---|---|

## 5.8.2 Modify

**Table 5.8.2.1: Descriptors used by Modify request**

| Descriptors used by Modify request: | Events, Signals, Media (TerminationState, LocalControl, Local and Remote) |
|---|---|

**Table 5.8.2.2: Descriptors used by Modify reply**

| Descriptors used by Modify reply: | Events, Signals, Media (TerminationState, LocalControl, Local and Remote),Error<br><br>When command request excludes an Audit Descriptor, the MGW response shall only include descriptors which contained underspecified or overspecified properties in the command request. Furthermore, only those properties that were underspecified or overspecified in the request shall be sent in the reply. Exceptions to this rule are:<br>- -The Error Descriptor<br>- SDP properties returned in "Configure IMS Resources" procedure as specified in 15.17.2.3. |
|---|---|

## 5.8.3 Subtract

**Table 5.8.3.1: Descriptors used in Subtract request**

| Descriptors used by Subtract request: | Audit (empty) or None |
|---|---|

**Table 5.8.3.2: Descriptors used in Subtract reply**

| Descriptors used by Subtract reply: | None |
|---|---|

## 5.8.4 Move

**Table 5.8.4.1: Command Move**

| Move command used: | Yes |
|---|---|

**Table 5.8.4.2: Descriptor used by Move command**

| Descriptors used by Move Request: | Events, Signals, Media (TerminationState, LocalControl, Local and Remote) |
|---|---|
| Descriptors used by Move Reply: | Events, Signals, Media (TerminationState, LocalControl, Local and Remote), Error<br>When command request excludes an Audit Descriptor, the MGW response shall only include descriptors which contained underspecified or overspecified properties in the command request. Furthermore, only those properties that were underspecified or overspecified in the request shall be sent in the reply. Exceptions to this rule are:<br>- -The Error Descriptor |

## 5.8.5 AuditValue

**Table 5.8.5.1: Auditvalue**

| Audited Properties: | Property Name and Identity | Descriptor |
|---|---|---|
| Termination ID | ServiceState:<br>- Root (MGW Audit) | Termination State Descriptor |
| Termination ID | MGC information (mgcinfo)<br>- individualtermination (NOTE1) | LocalControl Descriptor |
| Termination ID | For Packages:<br>- Root | Packages Descriptor (NOTE2) |
| Termination ID | None (MGW Audit) :<br>- Root | Audit (empty) Descriptor |
| Termination ID | SDPCapNeg Extensions:<br>- sdpe/* | TerminationState Descriptor |
| **Audited Statistics:** | Supported Statistics (NOTE3) (NOTE2) | |
| **Audited Signals:** | ALL | |
| **Audited Events:** | ALL | |
| **Package Audit possible:** | Yes | |
| NOTE1: The purpose to audit an individual Termination is to retrieve MGC Information if supported.<br>NOTE2: Optional<br>NOTE3: The statistics defined in the MSRP Statistics Package can be obtained via the MRFC auditing the MRFP. The supported statistics are msrpstat/nms, msrpstat/nmr, msrpstat/vms and msrpstat/vmr. | | |

## 5.8.6 AuditCapabilities

**Table 5.8.6.1: AuditCapabilities**

| Audited Properties: | Property Name and Identity | Descriptor |
|---|---|---|
| | FFS | FFS |
| **Audited Statistics:** | None | |
| **Audited Signals:** | None | |
| **Audited Events:** | None | |

## 5.8.7 Notify

**Table 5.8.7.1: Notify**

| Descriptors used by Notify Request or Reply: | ObservedEvents, Error |
|---|---|
| NOTE : The Error Descriptor shall not be used in Notify Request. | |

## 5.8.8     ServiceChange

**Table 5.8.8.1: Service Change Methods and Reason sent by MRFC**

| Service Change Methods Supported: | ServiceChange Reasons supported: |
|---|---|
| Restart (NOTE 1) | "900 Service Restored"<br>"901 Cold Boot",<br>"902 Warm Boot". |
| Graceful (NOTE 1) | "905 Termination Taken Out Of Service" |
| Forced (NOTE 1) | "905 Termination Taken Out Of Service" |
| Handoff (NOTE 1, NOTE 2) | "903 MGC Directed Change" |
| NOTE :     When a Service Change command on the Root termination with a method other than Graceful is sent, the command shall always be sent as the only command in a message. The sending node shall always wait for the reply to a Service Change command on the Root termination with a method other than Graceful before sending further command requests.  A Service Change command on the Root termination with method Graceful may be combined with other commands in a single message.<br>NOTE 1:   ROOT Only.<br>NOTE 2:   Not involving more than 1 MRFC. No support of handoff relates to a network deployment scenario with "primary H.248 systems only", which translates to no geographic redundancy of the MRFC. | |

**Table 5.8.8.2: Service Change Methods and Reason sent by MRFP:**

| Service Change Methods Supported: | ServiceChange Reasons supported: |
|---|---|
| Restart (NOTE 1) | "900 Service Restored",<br>"901 Cold Boot",<br>"902 Warm Boot",<br>"916 Packages Change" (Optional)<br>"917 Capability Change" (Optional). |
| Graceful (NOTE 1) | "908 MG Impending Failure " |
| Forced (NOTE 1) | "905 Termination Taken Out Of Service" |
| Handoff (NOTE 1, NOTE 2) | "903 MGC Directed Change" |
| Failover (NOTE 3) | "909 MGC Impending Failure" |
| Disconnected (NOTE 1) | "900 Service Restored"<br>"916 Packages Change" (Optional)<br>"917 Capability Change" (Optional) |
| NOTE :     When a Service Change command on the Root termination with a method other than Graceful is sent, the command shall always be sent as the only command in a message. The sending node shall always wait for the reply to a Service Change command on the Root termination with a method other than Graceful before sending further command requests.  A Service Change command on the Root termination with method Graceful may be combined with other commands in a single message.<br>NOTE 1:   ROOT only.<br>NOTE 2:   In response to a MGC Ordered Re-Register<br>NOTE 3:   Only for TISPAN NGN MRF. Not involving more than 1 MRFP. No support of handoff relates to a network deployment scenario with "primary H.248 systems only", which translates to no geographic redundancy of the MGW. | |

**Table 5.8.8.3: Service Change Address**

| ServiceChangeAddress used: | No |
|---|---|

**Table 5.8.8.4: Service Change Delay**

| ServiceChangeDelay used: | No | |
|---|---|---|
| *If yes* | **Valid time period:** | - |

**Table 5.8.8.5: Service Change Incomplete Flag**

| ServiceChange Incomplete Flag used: | No |
|---|---|

**Table 5.8.8.6: Service Change Version**

| Version used in ServiceChangeVersion: | 2 |
|---|---|

**Table 5.8.8.7: Profile negotiation**

| Profile negotiation as per H.248.18: | No |
|---|---|

## 5.8.9 Manipulating and Auditing Context Attributes

**Table 5.8.9.1: Manipulating and Auditing Context Attributes**

| Context Attributes Manipulated: | ALL supported attributes (See table 5.5.1.) (NOTE) |
|---|---|
| Context Attributes Audited: | ALL supported attributes except Priority Indicator (See table 5.5.1.) (NOTE) |
| NOTE: For ContextAttribute Descriptor, the details of supported attribute include: Floor Control Algorithm (fcpoli/fca), Max Floor Users (fcpoli/mfu), Floor Control Conference Identity (fcsig/fconfid) and Floor and Stream Association (fcsig/fsa) ||

# 5.9 Generic Command Syntax and Encoding

**Table 5.9.1: Encoding**

| Supported Encodings: | Binary (optional)<br>Text (optional)<br>The receiver shall support:<br>• Short Token Notation<br>• Long Token Notation |
|---|---|

# 5.10 Transactions

**Table 5.10.1: Transactions**

| Maximum number of Transaction Requests / Replies / TransResponseAcks / Segment Replies per message: | 10 |
|---|---|
| NOTE : When more than one element are conveyed in one message, it is recommended that this message comprises a Transaction Request / Transaction Reply / Transaction Pending plus a Transaction Response Ack. ||

**Table 5.10.2: Segmentation**

| Segmentation Supported: | UDP : No<br>SCTP : Inherent in transport |
|---|---|
| NOTE: The H.248 Segmentation Package according Annex E.14 of H.248.1 Version 3 is intended for H.248 transport technologies without the capability of automatic message segmentation. This method is not required for UDP- or SCTP-based H.248 signalling transport in this Profile. ||

**Table 5.10.3: Commands per Transaction Request**

| Maximum number of commands per Transaction request: | Unlimited |
|---|---|

**Table 5.10.4: Commands per Transaction Reply**

| Maximum number of commands per Transaction reply: | Unlimited |
|---|---|

.

**Table 5.10.5: Optional Commands**

| Commands able to be marked "Optional": | ALL |
|---|---|
| NOTE: The meaning of this table is that if one of the listed commands failed then the possibly present subsequent command within the same transaction will be processed. | |

**Table 5.10.6: Transaction Timers**

| Transaction Timer: | Value |
|---|---|
| NormalMGExecutionTime | Provisioned |
| NormalMGCExecutionTime | Provisioned |
| MGOriginatedPendingLimit | Provisioned |
| MGCOriginatedPendingLimit | Provisioned |
| MGProvisionalResponseTimerValue | Provisioned |
| MGCProvisionalResponseTimerValue | Provisioned |

# 5.11 Messages

It is recommended that MRFP and MRFC names are in the form of fully qualified domain name. For example the domain name of the MRFC may be of the form MRFC1.whatever.net and the name of the MRFP may be of the form mg1.whatever.net.

The fully qualified domain name will be used by the MRFP and MRFC as part of the "Message Identifier" in the H.248 messages which identifies the originator of the message.

The MRFC domain name is provisioned in the MRFP or retrieved from the DNS using SRV records.

The use of a domain name provides the following benefits:

- MRFPs and MRFCs are identified by their domain name, not their network addresses. Several addresses can be associated with a domain name. If a command cannot be forwarded to one of the network addresses, implementations shall retry the transmission using another address.

- MRFPs and MRFCs may move to another platform. The association between a logical name (domain name) and the actual platform are kept in the Domain Name Service (DNS). MRFP and MRFC shall keep track of the record's time-to-live read from the DNS. They shall query the DNS to refresh the information if the time-to-live has expired.

The domain name may be used by MRFC/MRFP for authentication purposes.

# 5.12 Transport

**Table 5.12.1: Transport**

| Supported Transports: | Transport over SCTP shall be supported and shall conform to Recommendation H.248.4 [4]. Support of UDP is optional, dependent on a network operator's decision, based on the network configuration.<br>• SCTP(recommended) (NOTE1).<br>• UDP(optional). |
|---|---|
| NOTE: If using SCTP as defined in IETF RFC 2960 [8], the MRFP shall always be the node to perform the "Initiation". | |
| NOTE1: H.248 is "SCTP user" in this case of H.248/SCTP/IP based transport according ITU-T Rec. H.248.4. The number of used SCTP Streams for traffic of the H.248 Control Association must be defined, see § 8/H.248.4. A single SCTP Stream is the default assumption ("Single-Stream Mode") in this Profile. | |

**Table 5.12.2: Segmentation**

| Segmentation Supported: | No |
|---|---|

**Table 5.12.3: Control Association Monitoring**

| Control Association Monitoring Supported: | Monitoring mechanism is dependent on used H.248 transport<br><br>• **SCTP**: inherent capability of SCTP (NOTE)<br><br>• **UDP**:<br>1. H.248.14 (MRFP-driven monitoring)<br><br>2. Empty AuditValue on ROOT (MRFC-driven monitoring) |
|---|---|
| NOTE: Use of H.248.14 for this is FFS. | |

# 5.13 Security

**Table 5.13.1: Security**

| Supported Security: | None |
|---|---|
| NOTE: Both the MRFC and MRFP are assumed to be within a secure IP zone of a single operator. | |

# 5.14 Packages

## 5.14.1 Mandatory Packages

**Table 5.14.1: Mandatory packages**

| Mandatory Packages | | |
|---|---|---|
| **Package Name / Reference** | **Package ID** | **Version** |
| Generic (see ITU-T Recommendation H.248.1 [3]) | g, (0x0001) | 1 |
| Base Root (see ITU-T Recommendation H.248.1 [3]) | root, (0x0002) | 2 |
| Network (see ITU-T Recommendation H.248.1 [3]) | nt, (0x000b) | 1 |
| Hanging Termination Detection (see ITU-T Recommendation H.248.36 [30]). | hangterm, (0x0098) | 1 |

## 5.14.2 Optional Packages

**Table 5.14.2: Optional packages**

| Optional Packages | | | |
|---|---|---|---|
| **Package Name / Reference** | **Package ID** | **Version** | **Support dependent on:** |
| DTMF Detection Package (see ITU-T Recommendation H.248.1 [3] Annex E.6); | dd, (0x0006) | 1 | Support is mandatory if DTMF Detection is supported. |
| Tone Generator Package (see ITU-T Recommendation H.248.1 [3]) | tonegen, (0x0003) | 1 | This package is "extension only". It must be supported if extended but shall not be published over the protocol. It is here for information only. |
| Basic Call Progress Tones Generator with Directionality(see ITU-T Recommendation Q.1950 [13]) | bcg, (0x0023) | 1 | If CS type Services provided by network |
| Call Progress Tones Generator (see ITU-T Recommendation H.248.1 3]) | cg, (0x0007) | 1 | If CS type Services provided by network |
| Basic Services Tones Generator (see ITU-T Recommendation Q.1950 [13]) | srvtn, (0x0025) | 1 | If CS type Services provided by network |
| Expanded Call Progress Tones Generator (see ITU-T Recommendation Q.1950 [13]) | xcg, (0x0024) | 1 | If CS type Services provided by network |
| Basic Announcement Syntax (see ITU-T Recommendation H.248.9 [6]) | bannsyx, (0x0047) | 1 | Support is optional if playing announcement is supported. |
| Voice Variable Syntax (see ITU-T Recommendation H.248.9 [6]) | vvsyx, (0x0048) | 1 | Support is optional if playing announcement is supported. |
| Announcement Set Syntax (see ITU-T Recommendation H.248.9 [6]) | setsyx, (0x0049) | 2 | Support is optional if playing announcement is supported. |
| General text Variable type (see ITU-T Recommendation H.248.9 [6]) | phrsyx, (0x004a) | 2 | Support is optional if playing announcement is supported. |
| Advanced Audio Server Base (see ITU-T Recommendation H.248.9 a1 [26]) | aasb, (0x0033) | 2 | Support is optional if playing announcement is supported. |
| AAS Recording package (see ITU-T Recommendation H.248.9 [6]) | aasrec, (0x0035) | 1 | Support is optional if Audio Record is supported. |
| AAS segment management (see ITU-T Recommendation H.248.9 [6]) | aassm, (0x0036) | 1 | |
| Generic Announcement (see ITU-T Recommendation H.248.7 [5]) | an, (0x001d) | 2 | Support is mandatory if playing announcement is supported. |
| Intrusion Tones Generation (see ITU-T Recommendation Q.1950 [13]) | int, (0x0027) | 1 | If CS type Services provided by network |
| Business Tones Generation (see ITU-T Recommendation Q.1950 [13]) | biztn, (0x0028) | 1 | If CS type Services provided by network |
| Conferencing Tones Generation (see ITU-T Recommendation H.248.27 [12]) | conftn, (0x0038) | 1 | Support is optional and may be used if Audio Conference is supported. |
| Inactivity Timer (see ITU-T Recommendation H.248.14 [9]) | it, (0x0045) | 1 | Support is mandatory if UDP transport is enabled for H.248 messages. |
| MGC Information Package (see ITU-T Recommendation H.248.45, | mgcinfo, (0x00a0) | 1 | This package may be supported as an operator option. For this profile the information string shall be limited to 32 octets in length. |
| Advanced audio server base package for TTS enhancement (see ITU-T Recommendation H.248.9 a1 [26]) | aastts, (0x00a8) | 1 | Support is mandatory if Text to Speech is supported. |
| ASR package (see ITU-T Recommendation H.248.9 a1 [26]) | asr, (0x00a6) | 1 | Support is mandatory if Automatic Speech Recognition is supported. |

| Multimedia Recording Package (see ITU-T Recommendation H.248.9 a1 [26]) | mrp, (0x00b3) | 1 | Support is mandatory if Multimedia recording is supported. |
|---|---|---|---|
| Multimedia play package (see ITU-T Recommendation H.248.9 a1 [26]) | mpp, (0x00a9) | 1 | Support is mandatory if Multimedia announcement file is supported. |
| Overload Control Package (see ITU-T Recommendation H.248.11 [7]) | ocp, (0x0051) | 1 | |
| RTP Package (see ITU-T Recommendation H.248.1 [3]) | rtp, (0x000c) | 1 | |
| MSRP Statistics Package (see ITU-T Recommendation H.248.69 [35]) | msrpstat, (0x00ea) | 1 | Support is mandatory if Message conference is supported. |
| Play Message Package (see ITU-T Recommendation H.248.69 [35]) | mess, (0x00ec) | 1 | Support is mandatory if Message conference is supported. |
| Message Filtering Package (see ITU-T Recommendation H.248.69 [35]) | mf, (0x00ef) | 1 | Support is mandatory if Message conference is supported. |
| Record Message Package (see ITU-T Recommendation H.248.69 [35]) | recmess, (0x00f1) | 1 | Support is mandatory if Message conference is supported. |
| Floor Control Package (see ITU-T Recommendation H.248.19a2 [33]) | fcp, (0x006e) | 2 | Support is mandatory if Floor control is supported. |
| Floor Control Policy Package (see ITU-T Recommendation H.248.19a2 [33]) | fcpoli, (0x00ab) | 1 | Support is mandatory if Floor control is supported. |
| Floor Status Change Handling Package (see ITU-T Recommendation H.248.19a2 [33]) | fschp, (0x00aa) | 1 | Support is mandatory if Floor control is supported. |
| Floor Control Signalling Package (see ITU-T Recommendation H.248.19a2 [33]) | fcsig, (0x00e5) | 1 | Support is mandatory if Floor control is supported. |
| Explicit Congestion Notification for RTP-over-UDP Support (see see ITU-T Recommendation H.248.82 [44]) | ecnrous (0x010b) | 1 | Support of ECN feature |
| Diffserv (ITU-T Recommendation H.248.52 [43]) | ds, (0x008b) | 2 | Support of MPS |
| MG Act-as STUN Server (ITU-T Recommendation H.248.50 [47]) | mgastuns (0x00c2) | 1 | Support of incoming STUN connectivity checks. Applicable for ICE lite and full ICE |
| Originate STUN Continuity Check (see ITU-T Recommendation H.248.50 [47]) | ostuncc (0x00c3) | 1 | Support of originating STUN connectivity checks Only applicable for full ICE |
| TCP basic connection control (ITU-T Recommendation H.248.89 [54]) | tcpbcc, (0x0115) | 1 | Support of TCP based media. |
| TLS basic session control (ITU-T Recommendation H.248.90 [55]) | tlsbsc, (0x0117) | 1 | Support of TCP based media using TLS. Support is mandatory if IMS media plane security using the pre-shared key (PSK) ciphersuites for TLS is supported. |
| MGC Controlled Bearer Level ALG (see ITU-T Recommendation H.248.78 [65]) | mcbalg (0x0108) | 2 | Support of MGC controlled bearer level ALG functionality for CLUE message handling in telepresence. |
| Enhanced Revised Offer/Answer SDP Support ([ITU-T Recommendation H.248.80 [70]) | eroas, (0x0109) | 1 | Support of the SDP Capability Negotiation syntax |

## 5.14.3   Package Usage Information

### 5.14.3.1    Generic Package

**Table 5.14.3.1.1: Package Usage Information for Generic Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |

| | - | - | - | - |
|---|---|---|---|---|
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| Cause (g/cause, 0x0001/0x0001) | M | ADD, MOD, NOTIFY | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | None | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | General Cause (Generalcause, 0X0001) | M | "NR" Normal Release (0x0001) "UR" Unavailable Resources (0x0002) "FT" Failure, Temporary (0x0003) "FP" Failure, Permanent (0x0004) "IW" Interworking Error (0x0005) "UN" Unsupported (0x0006) | - |
| | Failure Cause (FailureCause, 0x0002) | O | Octet String | - |
| Signal Completion. (g/sc, 0x0001/0x0002) | M | ADD, MOD, MOVE, NOTIFY | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | None | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | Signal Identity (SigID, 0x0001) | M | pkgdName syntax | - |
| | Termination Method (Meth, 0x0002) | M | "TO" (0x0001) Signal timed out or otherwise completed on its own "EV" (0x0002) Interrupted by event "SD" (0x0003) Halted by new Signals descriptor "NC" (0x0004) Not completed, other cause | - |
| | Signal List Id (SLID, 0x0003) | O | Integer | Not Applicable |
| | Request ID (RID, 0x0004) | O | String indicating the Request ID | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.2    Base Root Package

**Table 5.14.3.2.1: Package Usage Information for Base Root Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | | Provisioned Value: |
|---|---|---|---|---|---|
| MaxNrOfContexts (root/maxNumberOfContexts, 0x0002/0x0001) | M | AuditValue | 1 and up | | Implementation Specific |
| MaxTerminationsPerContext (root/maxTerminationsPerContext, 0x0002/0x0002) | O | AuditValue | See 5.4 | | Implementation Specific |
| normalMGExecutionTime (root/normalMGExecutionTime, 0x0002/0x0003) | O | AuditValue | Integer | | Operator Defined |
| normalMGCExecutionTime (root/normalMGCExecutionTime, 0x0002/0x0004) | O | AuditValue | Integer | | Operator Defined |
| MGProvisionalResponseTimerValue （root/ MGProvisionalResponseTimerValue, 0x0002/0x0005） | O | AuditValue | Integer(NormalMGExecutionTime + networkdelay) | | Operator Defined |
| MGCProvisionalResponseTimerValue (root/ MGCProvisionalResponseTimerValue, 0x0002/0x0006) | O | AuditValue | Integer (initially NormalMGCExecutionTime + networkdelay) | | Operator Defined |
| MGCOriginatedPendingLimit (root/ MGCOriginatedPendingLimit, 0x0002/0x0007) | O | AuditValue | Integer | | Operator Defined |
| MGOriginatedPendingLimit (root/ MGOriginatedPendingLimit, 0x0002/0x0008) | O | AuditValue | Integer | | Operator Defined |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | | **Duration Provisioned Value:** |
| **None** | **-** | **-** | | | **< -** |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | | **Duration Provisioned Value:** |
| | - | - | - | | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | | |
| None | - | - | | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | | **Provisioned Value:** |
| | - | - | - | | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | | **Provisioned Value:** |
| | - | - | - | | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | **Supported Values:** | | |
| None | - | - | - | | |
| **Error Codes** | **Mandatory/ Optional** | | | | |
| None | - | | | | |

## 5.14.3.3 Overload Control Package

**Table 5.14.3.3.1: Package Usage Information for Overload Control Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | - | - | - | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| MG_Overload. (ocp/ mg_overload, 0x0051/0x0001) | M | ADD, MOD, NOTIFY | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | **Supported Values:** | |
| None | - | - | - | |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

## 5.14.3.4 Network Package

**Table 5.14.3.4.1: Package Usage Information for Network Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| Maximum Jitter Buffer (nt /jit, 0x000b/0x0007) | M | ADD, MOD, MOVE | ALL | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | - | - | - | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| network failure(nt / netfail, 0x000b/0x0005) | M | ADD, MOD, MOVE, NOTIFY | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | none | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | cause(cs,0x0001) | M | ALL | - |
| quality alert (nt / qualert, 0x000b/0x0006) | M | ADD, MOD, MOVE, NOTIFY | | |
| | **Event** Parameters | **Mandatory/** Optional | **Supported** Values: | Provisioned Value: |
| | Threshold(th,0x0001) | M | 0 to 99 | |
| | **ObservedEvent** Parameters | **Mandatory/** Optional | **Supported** Values: | Provisioned Value: |
| | Threshold(th,0x0001) | M | 0 to 99 | |

| Statistics | Mandatory/ Optional | Used in command: | Supported Values: |
|---|---|---|---|
| Duration(nt / dur, 0x000b/0x0001) | M | AUDITVALUE | ALL |
| Octets Sent (nt / os, 0x000b/0x0002) | M | AUDITVALUE | ALL |
| Octets Received(nt / or, 0x000b/0x0003) | M | AUDITVALUE | ALL |
| Error Codes | Mandatory/ Optional | | |
| - | - | | |

### 5.14.3.5 RTP Package

**Table 5.14.3.5.1: Package Usage Information for RTP Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | - | - | - | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| Payload Transition, (rtp/pltrans, 0x000C/0x0001) | M | ADD, MOD, MOVE, NOTIFY | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | None | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | rtppayload (rtppltype, 0x0001) | M | A valid encoding name | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| Packets Sent, (rtp/ps, 0x000C/0x0004) | O | AUDITVALUE, SUBTRACT REPLY | | ALL |
| Packets Received, (rtp/pr, 0x000C/0x0005) | O | AUDITVALUE , SUBTRACT REPLY | | ALL |
| Packet Loss, (rtp/pl, 0x000C/0x0006) | O | AUDITVALUE , SUBTRACT REPLY | | ALL |
| Jitter, (rtp/jit, 0x000C/0x0007) | O | AUDITVALUE , SUBTRACT REPLY | | ALL |
| Delay, (rtp/delay, 0x000C/0x0008) | O | AUDITVALUE , SUBTRACT REPLY | | ALL |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.6 DTMF Detection Package

**Table 5.14.3.6.1: Package Usage Information for DTMF Detection Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | - | - | - | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| DTMF character 0 (dd/d0,0x0006/0x0010) | M | ADD, MOD, NOTIFY | | |
| DTMF character 1 (dd/d1,0x0006/0x0011) | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| DTMF character 2 (dd/d2,0x0006/0x0012) | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| DTMF character 3 (dd/d3,0x0006/0x0013) | - | - | - | - |
| DTMF character 4 (dd/d4,0x0006/0x0014) | | | | |
| DTMF character 5 (dd/d5,0x0006/0x0015) | | | | |
| DTMF character 6 (dd/d6,0x0006/0x0016) | | | | |
| DTMF character 7 (dd/d7,0x0006/0x0017) | | | | |
| DTMF character 8 (dd/d8,0x0006/0x0018) | | | | |
| DTMF character 9 (dd/d9,0x0006/0x0019) | | | | |
| DTMF character * (dd/ds,0x0006/0x0020) | | | | |
| DTMF character # (dd/do,0x0006/0x0021) | | | | |
| DTMF character A (dd/da,0x0006/0x001a) | | | | |
| DTMF character B (dd/db,0x0006/0x001b) | | | | |
| DTMF character C (dd/dc,0x0006/0x001c) | | | | |
| DTMF character D (dd/dd,0x0006/0x001d) | | | | |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.7 Call Progress Tones Generator Package

**Table 5.14.3.7.1: Package Usage Information for Call Progress Tones Generator Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| Dial Tone, (cg/dt, 0x0007/0x030) | M | ADD, MOD, MOVE | | Value |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |

| Ringing Tone, (cg/rt, 0x0007/0x031) Busy Tone, (cg/bt, 0x0007/0x032) Congestion Tone, (cg/ct, 0x0007/0x033) Special Information Tone, (cg/sit, 0x0007/0x034) Warning Tone, (cg/wt, 0x0007/0x035) Payphone Recognition Tone, (cg/pt, 0x0007/0x036) Call Waiting Tone, (cg/cw, 0x0007/0x037) Caller Waiting Tone, (cg/cr, 0x0007/0x038) | - | - | - | - |
|---|---|---|---|---|
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | **Supported Values:** | |
| None | - | - | - | |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

## 5.14.3.8 Basic Services Tones Generator Package

**Table 5.14.3.8.1: Package Usage Information for Basic Services Tones Generator Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | **-** | **-** | **-** | **-** |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| Recall Dial Tone (srvtn/rdt,0x0025/0x004f) Confirmation Tone (srvtn/conf,0x0025/0x0050) Held Tone (srvtn/ht,0x0025/0x0051) Message Waiting Tone (srvtn/mwt,0x0025/0x0052) | **O** | ADD, MOD, MOVE | | Value |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | Tone Direction (btd, 0x0001) | M | Internal / External | Default=External |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |

| - | - | - | - | - |
|---|---|---|---|---|
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.9 Expanded Call Progress Tones Generator Package

**Table 5.14.3.9.1: Package Usage Information for Expanded Call Progress Tones Generator Package**

| **Properties** | **Mandatory/ Optional** | **Used in command:** | **Supported Values:** | **Provisioned Value:** |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| Comfort Tone (xcg/cmft,0x0024/0x004a) | O | ADD, MOD, MOVE | | Value |
| Off-hook warning Tone (xcg/roh, 0x0024/0x004b) | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| Negative Acknowledgement (xcg/nack,0x0024/0x004c) Vacant Number Tone (xcg/vac, 0x0024/0x004d) Special Conditions Dial Tone (xcg/spec,0x0024/0x004e) | Tone Direction (btd, 0x0001) | M | Internal / External | Default=External |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.10 Basic Announcement Syntax Package

**Table 5.14.3.10.1: Package Usage Information for Basic Announcement Syntax Package**

| **Properties** | **Mandatory/ Optional** | **Used in command:** | **Supported Values:** | **Provisioned Value:** |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | - | - | - | - |

| Events | Mandatory/ Optional | Used in command: | | |
|---|---|---|---|---|
| None | - | - | | |
| | Event Parameters | Mandatory/ Optional | Supported Values: | Provisioned Value: |
| | - | - | - | - |
| | ObservedEvent Parameters | Mandatory/ Optional | Supported Values: | Provisioned Value: |
| | - | - | - | - |
| Statistics | Mandatory/ Optional | Used in command: | | Supported Values: |
| None | - | - | | - |
| Error Codes | Mandatory/ Optional | | | |
| None | - | | | |

### 5.14.3.11 Voice Variable Syntax Package

**Table 5.14.3.11.1: Package Usage Information for Voice Variable Syntax Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| Signals | Mandatory/ Optional | Used in command: | | Duration Provisioned Value: |
| None | - | - | | - |
| | Signal Parameters | Mandatory/ Optional | Supported Values: | Duration Provisioned Value: |
| | - | - | - | - |
| Events | Mandatory/ Optional | Used in command: | | |
| None | - | - | | |
| | Event Parameters | Mandatory/ Optional | Supported Values: | Provisioned Value: |
| | - | - | - | - |
| | ObservedEvent Parameters | Mandatory/ Optional | Supported Values: | Provisioned Value: |
| | - | - | - | - |
| Statistics | Mandatory/ Optional | Used in command: | | Supported Values: |
| None | - | - | | - |
| Error Codes | Mandatory/ Optional | | | |
| None | - | | | |

### 5.14.3.12 Announcement Set Syntax Package

**Table 5.14.3.12.1: Package Usage Information for Announcement Set Syntax Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| Signals | Mandatory/ Optional | Used in command: | | Duration Provisioned Value: |
| None | - | - | | - |
| | Signal Parameters | Mandatory/ Optional | Supported Values: | Duration Provisioned Value: |
| | - | - | - | - |
| Events | Mandatory/ Optional | Used in command: | | |
| None | - | - | | |
| | Event Parameters | Mandatory/ Optional | Supported Values: | Provisioned Value: |
| | - | - | - | - |

| | ObservedEvent Parameters | Mandatory/ Optional | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.13 General Text Variable Type Package

**Table 5.14.3.13.1: Package Usage Information for General Text Variable Type Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | - | - | - | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.14 Advanced Audio Server Base Package

**Table 5.14.3.14.1: Package Usage Information for Advanced Audio Server Base Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| Play (aasb/play, 0x0033/0x0001) | M | ADD, MOD, MOVE, AUDITVALUE, | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | Announcement (an, 0x0001) | M | Any String | - |
| | Iterations (it,0x0002) | O | Any Integer | 1 |
| | Interval(iv,0x0003) | O | 0 upwords | - |
| | Announcement Direction(di,0x0006) | M | Ext (0x01) Int (0x02) | Default=External |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| Audio operation failure (aasb/audfail, 0x0033 /0x0001) | M | NOTIFY | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |

| | ObservedEvent Parameters | Mandatory/ Optional | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| | Return Code(rc, 0x0001) | M | FFS | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.15 Basic Call Progress Tones Generator with Directionality

**Table 5.14.3.15.1: Package Usage Information For Basic Call Progress Tones Generator with Directionality Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| Dial Tone (bcg/bdt, 0x0023/0x0040) | O | ADD, MOD, MOVE | | Value |
| Ringing Tone (bcg/brt,0x0023/0x0041) | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| Busy Tone (bcg/bbt,0x0023/0x0042) Congestion Tone (bcg/bct,0x0023/0x0043) Special Information Tone (bcg/bsit,0x0023/0x0044) Warning Tone (bcg/bwt,0x0023/0x0045) Payphone Recognition Tone (bcg/bpt,0x0023/0x0046) Call Waiting Tone (bcg/bcw,0x0023/0x0047) Caller Waiting Tone (bcg/bcr, 0x0023/0x0048) Pay Tone (bcg/bpy, 0x0023/0x0049) | Tone Direction (btd, 0x0001) | M | Internal / External | Default=External |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.16 AAS Recording Package

**Table 5.14.3.16.1: Package Usage Information for AAS Recording Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| Maximum temporary record life (aasrec/maxtrl 0x0035/0x0003) | M | ADD, MOD, MOVE | ALL | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| PlayRecord (aasrec/playrec, 0x0035/0x0002) | M | ADD, MOD, MOVE | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | Record Length Timer(rlt, 0x0008) | O | ALL | - |
| | Recording Identifier (rid, 0x0009) | M | ALL | - |
| | EndInputKey(eik, 0x0010) | O | ALL | |
| | record direction (rd,0x0011) | O | Ext (0x01), Int(0x02) | Ext (0x01) |
| Make persistent (aasrec/makepers, 0x0035/0x0003) | Not Used | - | | |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | |
| | | | | |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| Audio operation failure (aasrec/audfail, 0x0035/0x0001) | M | NOTIFY | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | None | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | Return Code(rc, 0x0001) | M | ALL | - |
| PlayRecord success(aasrec/precsucc, 0x0035/0x0002)) | M | NOTIFY | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | None | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | Recording result (res,0x0003) | M | ALL | - |
| | Recording id (ri, 0x0004)) | M | ALL | - |
| | Record duration (rdur,0x0005) | M | ALL | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | **Supported Values:** | |
| None | - | - | - | |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.17    Multimedia Play Package

**Table 5.14.3.17.1: Package Usage Information for Multimedia Play Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| Play (mpp/play, 0x00a9/0x0001) | M | ADD, MOD, MOVE | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | Announcement (an,0x0001) | M | ALL | - |
| | Interations (it,0x0002) | O | Any Integer | 1 |
| | Interval (iv,0x0003) | O | 0 upwards | - |
| | Announcement Direction (di, 0x0006) | O | Ext (0x01) Int (0x02) | Default=External |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.18    Generic Announcement Package

**Table 5.14.3.18.1: Package Usage Information for Generic Announcement Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| Fixed: Announcement play (an/apf, x001d/0x0001) | M | ADD, MOD, MOVE | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | Announcement name (an ,0x0001) | M | ALL | - |
| | Number of cycles (noc ,0x0002) | O | Any Integer | - |
| | Announcement Variant (av ,0x0003) | O | ALL | - |
| | Announcement Direction (di ,0x0004) | O | Ext (0x01) Int (0x02) | Default=External |

| Events | Mandatory/ Optional | Used in command: | | |
|---|---|---|---|---|
| None | - | - | | |
| | Event Parameters | Mandatory/ Optional | Supported Values: | Provisioned Value: |
| | - | - | - | - |
| | ObservedEvent Parameters | Mandatory/ Optional | Supported Values: | Provisioned Value: |
| | - | - | - | - |
| Statistics | Mandatory/ Optional | Used in command: | | Supported Values: |
| None | - | - | | - |
| Error Codes | Mandatory/ Optional | | | |
| None | - | | | |

### 5.14.3.19 Intrusion Tones Generator Package

**Table 5.14.3.19.1: Package Usage Information for Intrusion Tones Generator Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| Signals | Mandatory/ Optional | Used in command: | | Duration Provisioned Value: |
| Intrusion Pending Tone (int/pend,0x0027/0x0057) Intrusion Tone (int/int,0x0027/0x0058) Intrusion Reminder Tone (int/rem,0x0027/0x0059) Toll Break-In Tone (int/tbi,0x0027/0x005a) Intrusion Queue Tone (int/intque,0x0027/0x005b) Busy Verification Tone (int/bv,0x0027/0x005c) | O | ADD, MOD, MOVE | | - |
| | Signal Parameters | Mandatory/ Optional | Supported Values: | Duration Provisioned Value: |
| | Tone Direction (btd, 0x0001) | M | Internal / External | Default=External |
| Events | Mandatory/ Optional | Used in command: | | |
| None | - | - | | |
| | Event Parameters | Mandatory/ Optional | Supported Values: | Provisioned Value: |
| | - | - | - | - |
| | ObservedEvent Parameters | Mandatory/ Optional | Supported Values: | Provisioned Value: |
| | - | - | - | - |
| Statistics | Mandatory/ Optional | Used in command: | | Supported Values: |
| None | - | - | | - |
| Error Codes | Mandatory/ Optional | | | |
| None | - | | | |

### 5.14.3.20 Business Tones Generation Package

**Table 5.14.3.20.1: Package Usage Information for Business Tones Generation Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| Off-Hook Queuing Tone (biztn/ofque,0x0028/0x005d) Expensive Route Warning Tone (biztn/erwt,0x0028/0x005e) Distinctive Dial Tone (biztn/ddt,0x0028/0x005f) Internal Dial Tone (biztn/idt,0x0028/0x0060) | O | ADD, MOD, MOVE | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | Tone Direction (btd, 0x0001) | M | Internal / External | Default=External |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | **Supported Values:** | |
| None | - | - | - | |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.21 Conferencing Tones Generation Package

**Table 5.14.3.21.1: Package Usage Information for Conferencing Tones Generation Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| Conf. Entrance Tone (conftn/enter, 0x0038/0x0061) Conf. Exit Tone (conftn/exit, 0x0038/0x0062) Conf. Lock Tone (conftn/lock, 0x0038/0x0063) Conf. Unlock Tone (conftn/unlock, 0x0038/0x0064) Time Limit Warning Tone (conftn/timelim, 0x0038/0x0065) | O | ADD, MOD, MOVE | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | Tone Direction (btd, 0x0001) | M | Internal / External | Default=External |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |

| | - | - | - | - |
|---|---|---|---|---|
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.22 Inactivity Timer Package

**Table 5.14.3.22.1: Package Usage Information for Inactivity Timer Package**

| **Properties** | **Mandatory/ Optional** | **Used in command:** | **Supported Values:** | **Provisioned Value:** |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | - | - | - | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| Inactivity Timeout(it/ito, 0x0045/0x0001) | M | MOD, NOTIFY | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | Maximum Inactivity Time(mit, 0x0001) | M | Any integer | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | None | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.23 MGC Information Package

**Table 5.14.3.23.1: Package Usage Information for MGC Information Package**

| **Properties** | **Mandatory/ Optional** | **Used in command:** | **Supported Values:** | **Provisioned Value:** |
|---|---|---|---|---|
| Data Block(MGCInfo /db, 0x00a0/0x0001) | M | ADD, MOD, AUDITVALUE | A range of 0 to 32 octets | An empty string |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | - | - | - | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |

| | ObservedEvent Parameters | Mandatory/ Optional | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.24 Advanced audio server base package for TTS enhancement

**Table 5.14.3.24.1: Package Usage Information for TTS enhancement package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| Play Segment Identifier (aastts/playsid, 0x00a8/0x0001) | M | ADD, MOD, MOVE | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | Announcement (an,0x0001) | M | ALL | - |
| | Iterations (it, 0x0003) | O | 0 upwards | 1 |
| | Interval (iv,0x0004) | O | 0 upwards | - |
| | Direction (di,0x0005) | O | Ext (0x01) Int(0x02) | Default=External |
| Play script (aastts/playscript, 0x00a8/0x0002) | M | ADD, MOD,MOVE | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | Script (script,0x0001) | M | (NOTE 1) | - |
| | Iterations (it,0x0003) | O | 0 upwards | 1 |
| | Interval (iv, 0x0004) | O | ALL | - |
| | Direction (di,0x0005) | | Ext (0x01) Int(0x02) | Default=External |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| TTS operation failure(aastts/ttsfail, 0x00a8/0x0001) | M | ADD, MOD, NOTIFY | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | None | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | Return Code (rc ,0x0001) | M | ALL | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |
| NOTE 1: The value shall comply with the Annex A : "The W3C SSML Profile for TTS function". | | | | |

### 5.14.3.25 ASR Package

**Table 5.14.3.25.1: Package Usage Information for ASR Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| ASR recognition with grammar script(asr/asrwgs, 0x00a6/0x0001) | M | ADD, MOD,MOVE | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | grammar file (rgs, 0x0002) | M | (NOTE 1) | - |
| | Recognition grammar script format (rgsf, 0x0004) | O | ABNF (0x0001), XML (0x0002) | ABNF (0x0001) |
| | recognition mode (rm, 0x0005) | O | Normal (0x0001), Hotword (0x0002) | Normal(0x0001) |
| | End Input Key (eik, 0x0006) | O | ALL | - |
| ASR recognition with grammar identifier(asr/asrid, 0x00a6/0x0002) | M | ADD, MOD,MOVE | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | Recognition grammar identifier (rgid, 0x0002) | M | ALL | - |
| | Recognition grammar script type (rgst, 0x0003) | Not Used | | |
| | Recognition grammar script format (rgsf, 0x0004) | O | ABNF (0x0001), XML (0x0002) | ABNF (0x0001) |
| | recognition mode (rm, 0x0005) | O | Normal (0x0001), Hotword (0x0002) | Normal(0x0001) |
| | End Input Key (eik, 0x0006) | O | ALL | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| ASR failure (asr/asrfail, 0x00a6/0x0001) | M | ADD, MOD, NOTIFY | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | None | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | Return Code (rc,0x0001) | M | ALL | - |
| ASR success(asr/asrsucc, 0x00a6/0x0002) | M | ADD, MOD, NOTIFY | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | None | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | ASR result (asrr, 0x0001) | M | ALL | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | **Supported Values:** | |
| None | - | - | - | |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |
| NOTE 1: The value shall comply with Annex B. "the W3C SRGS Profile for ASR function". | | | | |

### 5.14.3.26     Multimedia Recording Package

**Table 5.14.3.26.1: Package Usage Information for Multimedia Recording Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| PlayRecord (mrp/playrec, 0x00b3/0x0002) | M | ADD, MOD, MOVE | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | Record Length Timer(rlt, 0x0008) | M | ALL | - |
| | Recording Identifier (rid, 0x0009) | M | ALL | - |
| | EndInputKey(eik, 0x0010) | O | ALL | - |
| | record direction (rd,0x0011) | O | Ext（0x01）, Int(0x02) | Ext (0x01) |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| none | - | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.27     Tone Generator Package

**Table 5.14.3.27.1: Package Usage Information for Tone Generator Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| Play Tone (tonegen/pt,0x0003/0x0001) | Not Used | - | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | - | - | - | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.28 Hanging Termination Detection Package

**Table 5.14.3.28.1: Package Usage Information for Hanging Termination Detection Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | | Provisioned Value: |
|---|---|---|---|---|---|
| None | | | | | |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | | **Duration Provisioned Value:** |
| None | | | | | |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | | **Duration Provisioned Value:** |
| | | | | | |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | | |
| Termination Heartbeat (hangterm/ thb, (0x0098/0x0001) | M | ADD, MOD, MOVE, AUDITVALUE, NOTIFY | | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | | **Provisioned Value:** |
| | Timer X | M | ALL | | 0 (no heartbeat message) |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | | **Provisioned Value:** |
| | | | | | |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** | |
| None | | | | | |
| **Error Codes** | **Mandatory/ Optional** | | | | |
| | | | | | |

### 5.14.3.29 MSRP Statistics Package

**Table 5.14.3.29.1: Package Usage Information for MSRP Statistics Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | | Provisioned Value: |
|---|---|---|---|---|---|
| None | - | - | - | | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | | **Duration Provisioned Value:** |
| None | - | - | | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | | **Duration Provisioned Value:** |
| | - | - | - | | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | | |
| Messaging Quota (msrpstat/mquota, 0x00ea/0x0001) | M | ADD, MOD, NOTIFY | | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | | **Provisioned Value:** |
| | Number of Messages Sent Quota(msq, 0x0001) | **O** | 0 and up | | 0 |
| | Number of Messages Received Quota(mrq, 0x0002) | **O** | 0 and up | | 0 |
| | Messages Sent Volume Quota(msv, 0x0003) | **O** | 0 and up | | 0 |
| | Messages Received Volume Quota (mrv, 0x0004) | **O** | 0 and up | | 0 |
| | Time Quota (tm, 0x0005) | **O** | Any Integer | | 0 |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | | **Provisioned Value:** |

| | | | | |
|---|---|---|---|---|
| | Quota Reached (qreach, 0x0001) | M | 0x0001 - 0x0005 | - |
| | Number of Messages Sent (nms, 0x0002) | O | 0 and up | - |
| | Number of Messages Received (nmr, 0x0003) | O | 0 and up | - |
| | Volume of Messages Sent (vms, 0x0004) | O | 0 and up | - |
| | Volume of Messages Received (vmr, 0x0005) | O | 0 and up | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| **Individual Message Information (msrpstat/imi, 0x00ea/0x0002)** | Not Used | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | **Supported Values:** | |
| Number of Messages Sent (msrpstat/nms, 0x00ea/0x0001) | O | AUDITVALUE | 0 and up | |
| Number of Messages Received (msrpstat/nmr, 0x00ea/0x0002) | O | AUDITVALUE | 0 and up | |
| Volume of Messages Sent (msrpstat/vms, 0x00ea/0x0003) | O | AUDITVALUE | 0 and up | |
| Volume of Messages Received (msrpstat/vmr, 0x00ea/0x0004) | O | AUDITVALUE | 0 and up | |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

## 5.14.3.30   Play Message Package

### Table 5.14.3.30.1: Package Usage Information for Play Message Package

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| Send Message (mess/sm, 0x00ec/0x0001) | M | ADD, MOD, MOVE | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | Message Identity (mi, 0x0001) | M | Any String | - |
| | Message Contents by reference (mcr, 0x0002) | M | Any String | - |

| | Failure Report (fr, 0x0003) | O | yes/no | yes |
|---|---|---|---|---|
| | Success Report (sr, 0x0004) | O | yes/no | no |
| **Events** | **Mandatory/ Optional** | | **Used in command:** | |
| Message Sending Response Status (mess/msrs, 0x00ec/0x0001) | M | | ADD, MOD, NOTIFY | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | Message Identity (mi, 0x0001) | M | Any String | - |
| | Status Code (sc, 0x0002) | M | Any String | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | | **Mandatory/ Optional** | | |
| None | | - | | |

## 5.14.3.31 Message Filtering Package

**Table 5.14.3.31.1: Package Usage Information for Message Filtering Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| Incoming Message Filters (mf/imf, 0x00ef/0x0001) | O | ADD, MOD | (NOTE 1) | - |
| Incoming Message Filters by Reference (mf/imfr, 0x00ef/0x0002) | Not Used | - | - | - |
| Outgoing Message Filters (mf/omf, 0x00ef/0x0003) | O | ADD, MOD | (NOTE 1) | - |
| Outgoing Message Filters by Reference (mf/omfr, 0x00ef/0x0004) | Not Used | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | - | - | - | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| Filed Message (mf/fm, 0x00ef/0x0001) | Not Used | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| Filtering Runtime Error (mf/fre, 0x00??/0x0002) | FFS | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |

| | ObservedEvent Parameters | Mandatory/ Optional | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| Sieve Script Syntax Error (700) | FFS | | | |
| Unsupported Sieve Require Error (701) | FFS | | | |
| Sieve Actions Exceeded Error (702) | FFS | | | |
| NOTE 1: The value shall comply with Sieve [IETF RFC5228] with the exceptions described in H.248.69 [35] Clause 13.6. Fitering rules and Message treatment for Filtered message are included in the parameter. | | | | |

### 5.14.3.32 Record Message Package

**Table 5.14.3.32.1: Package Usage Information for Record Message Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| Record Message (recmess/rm, 0x00f1/0x0001) | M | ADD, MOD, MOVE | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | Storage Location (sl, 0x0001) | M | Any String | - |
| | Append (app, 0x0002) | Not Used | - | - |
| | Direction (dir, 0x0003) | O | EXT/INT | EXT |
| | Maximum Record Size (mrs, 0x0004) | Not Used | | |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| Record Operation Failure (recmess/messfail, 0x00f1/0x001 ) | Not Used | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.33 Floor Control Package

**Table 5.14.3.33.1: Package Usage Information for Floor Control Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| Controller's Floor Identity (fcp/cfi, 0x006e/0x0002) | M | ADD, MOD | Sub-list of Integer | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | - | - | - | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | **Supported Values:** | |
| None | - | - | - | |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.34 Floor Control Policy Package

**Table 5.14.3.34.1: Package Usage Information for Floor Control Policy Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| Floor Control Algorithm (fcpoli/fca, 0x00ab/0x0001) | M | ADD, MOD | Sub-list of String with (FloorID COLON Algorithm) | - |
| Max Floor Users (fcpoli/mfu, 0x00ab/0x0002) | M | ADD, MOD | Sub-list of String with (FloorID COLON NumUsers) | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | - | - | - | - |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |

| Statistics | Mandatory/ Optional | Used in command: | Supported Values: |
|---|---|---|---|
| None | - | - | - |
| **Error Codes** | **Mandatory/ Optional** | | |
| None | - | | |

### 5.14.3.35 Floor Status Change Handling Package

**Table 5.14.3.35.1: Package Usage Information for Floor Status Change Handling Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| Confirm Media Update (fschp/cmu, 0x00aa/0x0001) | M | MOD | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | Floor Status(fs, 0x0001) | M | Sub-list of String with (FloorID COLON Status) | - |
| | Result(res, 0x0002) | M | Success/Fail | Success |
| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
| Floor Status Detection and Reporting (fschp/fsdr, 0x00aa/0x0001) | M | ADD, MOD, NOTIFY | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | Floor Status(fs, 0x0001) | M | Sub-list of String with (FloorID COLON Status) | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | |
| None | - | | |

### 5.14.3.36 Floor Control Signalling Package

**Table 5.14.3.36.1: Package Usage Information for Floor Control Signalling Package**

| Properties | Mandatory/ Optional | Used in command: | Supported Values: | Provisioned Value: |
|---|---|---|---|---|
| Floor Control Conference Identity (fcsig/fconfid, 0x00e5/0x0001) | M | ADD, MOD | Sub-list of Integer | - |
| Floor and Stream Association (fcsig/fsa, 0x00e5/0x0002) | M | ADD, MOD | Sub-list of String | - |
| **Signals** | **Mandatory/ Optional** | **Used in command:** | | **Duration Provisioned Value:** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Duration Provisioned Value:** |
| | - | - | - | - |

| **Events** | **Mandatory/ Optional** | **Used in command:** | | |
|---|---|---|---|---|
| Floor Control Association Timeout (fcsig/tout, 0x00e5/0x0001) | Not Used | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| Floor Control Association Release (fcsig/rel, 0x00e5/0x0002) | Not Used | - | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values:** | **Provisioned Value:** |
| | - | - | - | - |
| **Statistics** | **Mandatory/ Optional** | **Used in command:** | | **Supported Values:** |
| None | - | - | | - |
| **Error Codes** | **Mandatory/ Optional** | | | |
| None | - | | | |

### 5.14.3.37 Explicit Congestion Notification for RTP-over-UDP Support (ecnrous)

**Table 5.14.3.37.1: Explicit Congestion Notification for RTP-over-UDP Support package**

| Properties | Mandatory/Optional | Used in command | Supported Values | Provisioned Value |
|---|---|---|---|---|
| ECN Enabled (ecnrous/ecnen, 0x010b/0x0001) | M | ADD, MODIFY | True, False | - |
| Congestion Response Method (ecnrous/crm, 0x010b/0x0002) | Not Signalled | - | - | "RDCC"(0x0002) NOTE |
| Initiation Method (ecnrous/initmethod, 0x010b/0x0003) | M | ADD, MODIFY | "leap", "inactive" | "leap" |
| ECN Mode (ecnrous/mode, 0x010b/0x0004) | Not Signalled | - | - | "setonly" (0x0001) in the Remote Descriptor and "readonly" (0x0002) in the Local Descriptor |
| ECT Marking (ecnrous/ectmark, 0x010b /0x0005) | Not Signalled | - | - | "0" (0x0002) |
| ECN Congestion Marking (ecnrous/congestmark, 0x010b/0x0006) | Not Signalled | - | - | "nomark" (0x0003) |
| ECN SDP Usage (ecnrous/ecnsdp, 0x010b/0x0007) | Not Signalled | - | - | "P" (0x0001) |

| Signals | Mandatory/Optional | Used in command | | Duration Provisioned Value |
|---|---|---|---|---|
| None | - | - | | - |
| | Signal Parameters | Mandatory/ Optional | Supported Values | Duration Provisioned Value |
| | - | - | - | - |

| Events | Mandatory/Optional | Used in command | | |
|---|---|---|---|---|
| ECN Failure (ecnrous/fail, 0x010b/0x0001) | M | ADD, MODIFY, NOTIFY | | |
| | Event Parameters | Mandatory/ Optional | Supported Values | Provisioned Value |
| | - | - | - | - |
| | - | - | - | - |
| | ObservedEvent Parameters | Mandatory/ Optional | Supported Values | Provisioned Value |
| | Failure Type (type,0x0001) | Mandatory | INIT, USE | - |
| | Media Sender SSRC (ssrc, 0x0002) | Not Supported | - | - |

| Statistics | Mandatory/Optional | Used in command | Supported Values |
|---|---|---|---|
| Source (ecnrous/ssrc, 0x010b/0x0001) | Not Supported | - | - |
| CE Counter (ecnrous/cecount, 0x010b/0x0002) | Not Supported | - | - |
| ECT0 Counter (ecnrous/ectzero, 0x010b/0x0003) | Not Supported | - | - |
| ECT1 Counter (ecnrous/ectone, 0x010b/0x0004) | Not Supported | - | - |
| Not-ECT Counter (ecnrous/notect, 0x010b/0x0005) | Not Supported | - | - |
| Lost Packets Counter (ecnrous/lost 0x010b/0x0006) | Not Supported | - | - |
| Extended Highest Sequence number (ecnrous/ehsn, 0x010b/0x0007) | Not Supported | - | - |
| Duplication Counter (ecnrous/dup, 0x010b/0x0008) | Not Supported | - | - |

| Error Codes | Mandatory/Optional |
|---|---|
| None | - |
| NOTE: Application Specific Rate Adaptation shall be applied in accordance with 3GPP TS 26.114 [41]. For speech this requires support of CMR and TMMBR for video. | |

### 5.14.3.38 Differentiated Services (ds)

**Table 5.14.3.38.1: Differentiated Services package**

| Properties | Mandatory/Optional | Used in command | Supported Values | Provisioned Value |
|---|---|---|---|---|
| Differentiated Services Code Point (ds/dscp,0x008b/0x0001) | M | ADD, MODIFY | ALL | Yes |
| Tagging Behaviour (ds/tb, 0x008b/0x0002) | Not signalled | - | - | "MARK" (0x0000) |
| **Signals** | **Mandatory/Optional** | **Used in command** | | **Duration Provisioned Value** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/Optional** | **Supported Values** | **Duration Provisioned Value** |
| | - | - | - | - |
| **Events** | **Mandatory/Optional** | **Used in command** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/Optional** | **Supported Values** | **Provisioned Value** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/Optional** | **Supported Values** | **Provisioned Value** |
| | - | - | - | - |
| **Statistics** | **Mandatory/Optional** | **Used in command** | **Supported Values** | |
| None | - | - | - | |
| **Error Codes** | **Mandatory/Optional** | | | |
| None | - | | | |

### 5.14.3.39 MG Act-as STUN Server (mgastuns)

**Table 5.14.3.39.1: MG Act-as STUN Server**

| Properties | Mandatory/Optional | Used in command | Supported Values | Provisioned Value |
|---|---|---|---|---|
| Act-as STUN Server (mgastuns/astuns, 0x00c2/0x0001) | M | ADD, MODIFY | ALL | - |
| **Signals** | **Mandatory/Optional** | **Used in command** | | **Duration Provisioned Value** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/Optional** | **Supported Values** | **Duration Provisioned Value** |
| | - | - | - | - |
| **Events** | **Mandatory/Optional** | **Used in command** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/Optional** | **Supported Values** | **Provisioned Value** |
| | - | - | - | - |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/Optional** | **Supported Values** | **Provisioned Value** |
| | - | - | | |
| **Statistics** | **Mandatory/Optional** | **Used in command** | **Supported Values** | |
| None | - | - | - | |
| **Error Codes** | **Mandatory/Optional** | | | |
| None | - | | | |

### 5.14.3.40 Originate STUN Continuity Check (ostuncc)

**Table 5.14.3.40.1: Originate STUN Continuity Check Package**

| Properties | Mandatory/Optional | Used in command | Supported Values | Provisioned Value |
|---|---|---|---|---|
| Host Candidate Realm (ostuncc/hcr, 0x00c3/0x0001) | O | ADD, MODIFY | ALL | Yes |
| **Signals** | **Mandatory/Optional** | **Used in command** | | **Duration Provisioned Value** |
| Send Connectivity Check (ostuncc/scc, 0x00c3/0x0001) | M | ADD, MODIFY | | Not Applicable |
| | **Signal Parameters** | **Mandatory/Optional** | **Supported Values** | **Duration Provisioned Value** |
| | Control (cntrl, 0x0001) | O | "controlling", "controlled" | Not Applicable |
| Send Additional Connectivity Check (ostuncc/sacc, 0x00c3/0x0002) | **Mandatory/Optional** | **Used in command** | | **Duration Provisioned Value** |
| | M | MODIFY | | Not Applicable |
| | **Signal Parameters** | **Mandatory/Optional** | **Supported Values** | **Duration Provisioned Value** |
| | Control (cntrl, 0x0001) | O | "controlling", "controlled" | Not Applicable |
| **Events** | **Mandatory/Optional** | **Used in command** | | |
| Connectivity Check Result (ostuncc/ccr, 0x00c3/0x0001) | M | ADD, MODIFY,  NOTIFY | | |
| | **Event Parameters** | **Mandatory/Optional** | **Supported Values** | **Provisioned Value** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/Optional** | **Supported Values** | **Provisioned Value** |
| | Candidate/Transport Pair (ctp, 0x0001) | M | ALL | Not applicable |
| New Peer Reflexive Candidate (ostuncc/nprc, 0x00c3/0x0002) | **Mandatory/Optional** | **Used in command** | | |
| | M | ADD, MODIFY,  NOTIFY | | |
| | **Event Parameters** | **Mandatory/Optional** | **Supported Values** | **Provisioned Value** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/Optional** | **Supported Values** | **Provisioned Value** |
| | Candidate (can, 0x0001) | M | ALL | Not applicable |
| **Statistics** | **Mandatory/Optional** | **Used in command** | **Supported Values** | |
| None | - | - | - | |
| **Error Codes** | **Mandatory/Optional** | | | |
| None | - | | | |

### 5.14.3.41 TCP basic connection control (tcpbcc)

**Table 5.14.3.41.1: TCP basic connection control package**

| Properties | Mandatory/Optional | Used in command | Supported Values | Provisioned Value |
|---|---|---|---|---|
| Incoming bearer connection establishment blocking (tcpbcc/bceb, 0x0115/0x0001) | O | ADD, MODIFY | ALL | "Unblocked" |
| Oneway Release Indicator (tcpbcc/ori, 0x0115/0x0002) | not supported | - | - | "False" |
| **Signals** | **Mandatory/Optional** | **Used in command** | | **Duration Provisioned Value** |
| Establish BNC (tcpbcc/EstBNC, 0x0115/0x0001) | M | ADD, MODIFY | | - |
| | **Signal Parameters** | **Mandatory/Optional** | **Supported Values** | **Duration Provisioned Value** |
| | - | - | - | - |
| Release BNC (tcpbcc/RelBNC, 0x0115/0x0002) | O (NOTE 1) | ADD, MODIFY | | - |
| | **Signal Parameters** | **Mandatory/Optional** | **Supported Values** | **Duration Provisioned Value** |
| | - | - | - | - |
| **Events** | **Mandatory/Optional** | **Used in command** | | |
| TCP connection state change (tcpbcc/BNCChange, 0x0115/0x0001) | O (NOTE 2) | ADD, MODIFY, NOTIFY | | |
| | **Event Parameters** | **Mandatory/Optional** | **Supported Values** | **Provisioned Value** |
| | Type of state change (Type, 0x0001) | M | Est [0x01] Bearer Established, Rel [0x05] Bearer Released | - |
| | **ObservedEvent Parameters** | **Mandatory/Optional** | **Supported Values** | **Provisioned Value** |
| | Type of state change (Type, 0x0001) | M | Est [0x01] Bearer Established, Rel [0x05] Bearer Released | - |
| **Statistics** | **Mandatory/Optional** | **Used in command** | **Supported Values** | |
| None | - | - | - | |
| **Error Codes** | **Mandatory/Optional** | | | |
| None | - | | | |
| NOTE 1: When the MRFC wants to explicitly trigger the TCP bearer connection release procedure (instead of the implicit trigger related to the removal of the H.248 stream via a MODify.request or SUBtract.request command). | | | | |
| NOTE 2: When the MRFC wants to monitor the execution of TCP bearer control procedures. | | | | |

### 5.14.3.42 TLS basic session control (tlsbsc)

**Table 5.14.3.42.1: TLS basic session control package**

| Properties | Mandatory/Optional | Used in command | Supported Values | Provisioned Value |
|---|---|---|---|---|
| Incoming security session establishment blocking (tlsbsc/bceb, 0x0117/0x0001) | O | ADD, MODIFY | ALL | "Unblocked" |
| **Signals** | **Mandatory/Optional** | **Used in command** | | **Duration Provisioned Value** |
| Establish BNC (tlsbsc/EstBNC, 0x0117/0x0001) | M | ADD, MODIFY | | - |
| | **Signal Parameters** | **Mandatory/Optional** | **Supported Values** | **Duration Provisioned Value** |
| | - | - | - | - |
| Release BNC (tlsbsc/RelBNC, 0x0117/0x0002) | O (NOTE 1) | ADD, MODIFY | | - |
| | **Signal Parameters** | **Mandatory/Optional** | **Supported Values** | **Duration Provisioned Value** |
| | - | - | - | - |
| **Events** | **Mandatory/Optional** | **Used in command** | | |
| TLS session state change (tlsbsc/BNCChange, 0x0117/0x0001) | O (NOTE 2) | ADD, MODIFY, NOTIFY | | |
| | **Event Parameters** | **Mandatory/Optional** | **Supported Values** | **Provisioned Value** |
| | Type of state change (Type, 0x0001) | M | Est [0x01] Bearer Established, Rel [0x05] Bearer Released | - |
| | **ObservedEvent Parameters** | **Mandatory/Optional** | **Supported Values** | **Provisioned Value** |
| | Type of state change (Type, 0x0001) | M | Est [0x01] Bearer Established, Rel [0x05] Bearer Released | - |
| **Statistics** | **Mandatory/Optional** | **Used in command** | **Supported Values** | |
| None | - | - | - | |
| **Error Codes** | **Mandatory/Optional** | | | |
| None | - | | | |
| NOTE 1: When the MRFC wants to explicitly trigger the TLS bearer session release procedure (instead of the implicit trigger related to the removal of the H.248 stream via a MODify.request or SUBtract.request command). | | | | |
| NOTE 2: When the MRFC wants to monitor the execution of TLS bearer control procedures. | | | | |

### 5.14.3.43 MGC Controlled Bearer Level ALG (mcbalg)

**Table 5.14.3.43.1: MGC Controlled Bearer Level ALG Package**

| Properties | Mandatory/Optional | Used in command | Supported Values | Provisioned Value |
|---|---|---|---|---|
| None | - | - | - | - |
| **Signals** | **Mandatory/Optional** | **Used in command** | | **Duration Provisioned Value** |
| Send Bearer Level Message (mcbalg/sblm, 0x0108/0x0001) | M | MODIFY | | Not Applicable |
| | **Signal Parameters** | **Mandatory/ Optional** | **Supported Values** | **Duration Provisioned Value** |
| | Message Content (mc, 0x0001) | M | ALL | Not applicable |
| | Sent Application Protocol (sap, 0x0002) | O | ALL | Not applicable |
| | Label (lbl, 0x0003) | O | ALL | Not applicable |
| **Events** | **Mandatory/Optional** | **Used in command** | | |
| Detect Bearer Level Message (mcbalg /det, 0x0108/0x0001) | M | MODIFY, NOTIFY | | |
| | **Event Parameters** | **Mandatory/ Optional** | **Supported Values** | **Provisioned Value** |
| | Protocol Filter (pf, 0x0001) | Not supported | - | - |
| | Message Filter (mf, 0x0002) | Not supported | - | - |
| | Forwarding Flag (ff, 0x0003) | Not supported | - | - |
| | Enhanced Protocol Filter (ehpf, 0x0004) | O | ALL | Not applicable |
| | Label (lbl, 0x0005) | O | ALL | Not applicable |
| | **ObservedEvent Parameters** | **Mandatory/ Optional** | **Supported Values** | **Provisioned Value** |
| | Message Content (mc, 0x0001) | M | ALL | Not applicable |
| | Detected Protocol (dtp, 0x0002) | O | ALL | Not applicable |
| | Label (lbl, 0x0003) | O | ALL | Not applicable |
| **Statistics** | **Mandatory/Optional** | **Used in command** | **Supported Values** | |
| None | - | - | - | |
| **Error Codes** | **Mandatory/Optional** | | | |
| None | - | | | |

### 5.14.3.44    Enhanced Revised Offer/Answer SDP Support (eroas)

**Table 5.14.3.44.1: Enhanced Revised Offer/Answer SDP Support package**

| Properties | Mandatory/Optional | Used in command | Supported Values | Provisioned Value |
|---|---|---|---|---|
| SDPCapNeg Extensions (eroas/sdpe, 0x0109/0x0001) | M | AuditValue | "cap-v0" | "cap-v0" |
| **Signals** | **Mandatory/Optional** | **Used in command** | | **Duration Provisioned Value** |
| None | - | - | | - |
| | **Signal Parameters** | **Mandatory/Optional** | **Supported Values** | **Duration Provisioned Value** |
| | - | - | - | - |
| **Events** | **Mandatory/Optional** | **Used in command** | | |
| None | - | - | | |
| | **Event Parameters** | **Mandatory/Optional** | **Supported Values** | **Provisioned Value** |
| | - | - | - | - |
| | **ObservedEvent Parameters** | **Mandatory/Optional** | **Supported Values** | **Provisioned Value** |
| | - | - | - | - |
| **Statistics** | **Mandatory/Optional** | **Used in command** | **Supported Values** | |
| None | - | - | - | |
| **Error Codes** | **Mandatory/Optional** | | | |
| None | - | | | |

# 5.15    Mandatory Support of SDP and Annex C Information Elements

The v=, o=, s=, m=, c=, t=, a= and b= lines of the SDP [20] syntax shall be supported. All other lines should be ignored if received.

**Table 5.15.1: Supported Annex C and SDP information elements**

| Supported Annex C and SDP information elements: |
|---|

| Information Element | Annex C Support | SDP Support |
|---|---|---|
| Protocol version (v=) | "SDP_V " | The protocol version (v=) line contains a single field:<br>*v= <version>*<br><br>and shall be used in accordance with IETF RFC 2327 [20] (i.e. v=0). |
| Origin (o=) | "SDP_O " | The origin line consists of 6 fields:<br>*o= <user name> <session ID> <version> <network type> <address type> <address>.*<br><br>The MRFC is not required to supply this line but shall accept it.<br><br>The MRFP should populate this line as follows or use the value received from the MRFC:<br><br>- <user name> should contain an hyphen<br>- <session ID> and <version> should contain one or mode digits as described in IETF RFC 2327 [20]<br>- <network type> shall be set to IN<br>- <address type> shall be set to IP4 or IP6 The Address Type shall be set to "IP4" or "IP6" depending on the addressing scheme used by the network to which the MRFP is connected.<br>- <address> should contain the fully qualified domain name of the gateway. |
| Session Name (s=) | "SDP_S" | The session name (s=) line contains a single field:<br>*s= <session-name>.*<br><br>The MRFC is not required to supply a session name but shall accept one. This line may be used to convey correlation information for use in CDRs.<br><br>The MRFP shall use an hyphen "-" as a session name or the value received from the MRFC. |
| Connection data (c=) | "SDP_C " | The connection data line consists of 3 fields:<br>*c= <network-type> <address-type> <connection-address>*<br><br>- The <network-type> shall be set to "IN".<br>- The <address-type> shall be set to "IP4" or "IP6" depending on the addressing scheme used by the network to which the MRFP is connected.<br>- The <connection-address> sent by the MRFC in the remote descriptor is the address to which the MRFP shall send the media flows.<br>- The <connection-address> sent by the MRFC in local descriptors may be a unicast IPv4 or IPv6 address or it may be wildcarded to allow the MRFP to choose an address.  In the second case, MGs shall fill this field with a unicast IP address at which they will receive the media stream. Thus a TTL value shall not be present and a "number of addresses" value shall not be present. The field shall not be filled with a fully-qualified domain name instead of an IP address.<br><br>When the <connection address> is wildcarded (i.e. choose wildcard) by the MRFC, the MRFP allocates an IP address based on the address type. The addressing space for which this address is taken may depend on the termination ID supplied by the MRFC. |

| Media announcements (m=) | "SDP_M " | Media Announcements (m=) lines consist of 3 fields:<br>*m= <media> <port> <transport> <format>*<br><br>- The <media> field shall be set to "audio"or "video" or "message" or "application" (NOTE 1).<br>- The <port> field in remote descriptors is provided by the MRFC and represents the port to which the MRFP shall send the media flows.<br>- The <port> field in local descriptors may be provided by the MRFC or wildcarded (i.e. choose wildcard) to allow the MRFP to choose a value for the port on which it wishes to receive the media stream<br>- The <transport> field shall be  according to table 5.15.2<br>- The <format> field may be explicitly supplied by the MRFC, wildcarded or overspecified. If the MRFC wishes to request the MRFP to choose which media formats it wishes to use for the call then the MRFC shall provide a "$" wildcard.  If the MRFC wishes to suggest that the MRFP selects a media format from a list of possible media formats then it shall provide a list of appropriate media types in accordance with SDP.  All conforming gateways shall support at least the default narrowband AMR codec as defined in 3GPP TS 26.114 [41]. Optionally, other codecs defined in 3GPP TS 26.114 [41] and  format "8" for RTP/AVP (i.e. G.711 A-Law).<br><br>Dynamic payloads shall not be used when a static RTP/AVP payload value is defined in IETF RFC 3551 [21]. |
| Bandwidth (b=) | "SDP_B " | The Bandwitdh (b=) line consists of 2 fields:<br>*b= <modifier>: <bandwidth-value>*<br><br>Bandwidth information shall be supplied by the MRFC if the required bandwidth cannot be immediately derived from the information contained in the m= line. If absent, the MRFP shall assume a reasonable default bandwidth value for well-known codecs and shall provide this value in the response sent to the MRFC. The Modifier field shall be set to "AS".<br><br>The Bandwidth Value field shall be set to the maximum bandwidth requirement of the media stream in kbit/s. The bandwidth value shall take into account all headers down to the IP layer, including a 5% bandwidth for RTCP packets. |
| Time (t=) | "SDP_T " | The time (t=) line consists of two fields:<br>*t= <start-time> <stop-time>.*<br><br>This line is ignored by both the MRFC and the MRFP if received in local and remote descriptors.<br><br>The MRFC is not required to supply a time description but shall accept one.<br><br>When supplied, this line shall be set to 0 0. |

| Attributes (a=) | "SDP_A " | Attributes (a=) lines consist of two fields:<br>*a= <attribute>: <value>*<br><br>One or more of the "a" attribute lines specified below may be included, depending on the payload type.<br><br>An attribute line not specified below should not be used. Only the following attributes are understood by the MRFP. Other attributes are ignored.<br><br>*a= rtpmap: <payload type> <encoding name>/<clock rate> [/<encoding parameters>]*<br>*a= fmtp:<format> <format specific parameters>*<br>*a= ptime: <time>*<br>*a= userid: <token of user identifier>* (NOTE 3)<br>*a= floorid: <token of Floor identifier>* (NOTE 3)<br>*a= path:MSRP-URI* (NOTE 4)<br>*a= rtcp-fb: <…>* (NOTE 5)<br>*a= extmap:<x> <CVO-URN or ROI URN>* (NOTE 6)<br>*a= imageattr: <payload type> <…>* (NOTE 7)<br>*a= sctp-port: <port>* (NOTE 8)<br>*a= max-message-size: <value>* (NOTE 8)<br>*a= dcmap:< dcmap-stream-id> < subprotocol-opt>* (NOTE 9)<br>*a= fingerprint: <certificate fingerprint>* (NOTE 10)<br>*a=predefined_ROI: <…>* (NOTE 11)<br>*a=bw-info: <payload type> <dir> <MaxSupBw>; <MaxDesBw>; <MinDesBw>; <MinSupBw>; <IpVer>* (NOTE 12)<br><br>ICE support<br>The attributes "a=candidate", "a=ice-pwd", and "a=ice-ufrag" (see IETF RFC 5245 [48]) may be provided for an SDP m-line in the local and remote descriptor if the MRFP supports ICE, see also 3GPP TS 24.229 [49]. In the local descriptor, the MRFC shall provide "a=ice-pwd", and "a=ice-ufrag" with wildcard sign "$" to request the allocation of a password and user name fragment, and the "a=candidate" of type "host" with the transport, port and priority parameters with wildcard sign "$" to request the allocation of a host candidate. The MRFP shall then reply with completed "a=ice-pwd", and "a=ice-ufrag" and "a=candidate" attributes in the local descriptor, and shall include "a=ice-lite" if it only supports ICE lite. In the remote descriptor, the MRFC may provide the "a=candidate", "a=ice-pwd", and "a=ice-ufrag".<br><br>SDP Capability Negotiation support:<br>the attributes of "a=acap", "a=tcap", "a=pcfg" and "a=acfg" (see IETF RFC 5939 [69]) may be provided in the local descriptor and/or remote descriptor. |
|---|---|---|

*ETSI*

NOTE 1: The "application" media is used to describe H.248 stream for a BFCP stream or H.248 stream for an UDP/DTLS/SCTP stream to be created for a CLUE data channel in telepresence using IMS as specified in 3GPP TS 24.103 [60]. The way to generate an "m" line for a BFCP stream follows the format specified in IETF RFC 4583 [32], where the port is always a TCP port, the transport field is "TCP/TLS/BFCP" if IMS media plane security is applied or otherwise "TCP/BFCP", the fmt (format) list is ignored. When a CLUE data channel is created, the "m" line for a UDP/DTLS/SCTP stream follows the format specified in IETF draft-ietf-mmusic-sctp-sdp [61] and IETF draft-ietf-mmusic-data-channel-sdpneg [62], where the transport field is "UDP/DTLS/SCTP", the fmt (format) indicates the usage of the SCTP association as "webrtc-datachannel".

NOTE 2: Void

NOTE 3: The "userid" and "floorid" are SDP media-level attributes. They are used in BFCP 'm' lines. The "floorid" defines a list of Floor identifiers, indicating the available Floor(s) for the user represented by the termination. The token representing the Floor identifier is the integer representation of the Floor ID. The "userid" attributes carry the integer representation of a user ID.

NOTE 4: An MSRP-URI is an "msrp" or "msrps" URI defined as "MSRP-URI = msrp-scheme "://" authority ["/" session-id] ";" transport *(";" URI-parameter)". The authority component contains a numeric IP address and port. The session-id part identifies a particular session of the participant allowing multiple sessions to share the same TCP connection.

NOTE 5: For AVPF transport, the "rtcp-fb" SDP attribute defined in IETF RFC 4585 [40] may be used to provide the feedback message types the MRFP is allowed to send and to indicate RTCP timing information. The support is optional and dependent on RTCP-fb support as described in 3GPP TS 26.114 [41]. The list of feedback messages supported by the MRFP is preconfigured in the MRFC. The "rtcp-fb SDP shall be sent from MRFC when applicable.

NOTE 6: Support of the RTP header extension to signal CVO or Sent ROI is optional. The attribute "a=extmap" (see IETF RFC 5285 [45]) may be provided for an m-line in the local and remote descriptor. CVO-URN is "urn:3gpp:video-orientation" for a 2 bit granularity of rotation or "urn:3gpp:video-orientation:6" for a higher granularity of rotation, and ROI-URNs are "urn:3gpp:roi-sent" for arbitrary ROI information and "urn:3gpp:predefined-roi-sent" for predefined ROI information respectively, as specified in 3GPP TS 26.114 [41] and "x" represents the local identifier of the RTP header extension element as specified in IETF RFC 5285 [45] and is any number in a range [1 - 14].

NOTE 7: The support of the generic image attribute to negotiate the image size is optional. The attribute "a=imageattr" (see IETF RFC 6236 [46]) may be provided for an m-line in the local and remote descriptor if the MRFP supports the generic image attributes, see also 3GPP TS 26.114 [41]. The local descriptor indicates the image sizes which the MRFP supports in the receiving direction for the selected payload type and corresponds to the "recv" keyword (see IETF RFC 6236 [46]) in the "a=imageattr" that the MRFC will send within the SDP body on the Mr interface. The remote descriptor indicates the image sizes which the MRFP supports in the sending direction for the selected payload type and corresponds to the "send" keyword (see IETF RFC 6236 [46]) in the "a=imageattr" that the MRFC will send within the SDP body on the Mr interface.

NOTE 8: The support of the "a=sctp-port" attribute to indicate the actual SCTP port is used only when the transport field of 'm' line is "UDP/DTLS/SCTP". The SDP "a=max-message-size" attribute may be used to indicate the maximum message size that an SCTP endpoint is willing to receive on the SCTP association associated with the 'm' line.

NOTE 9: The support of the dcmap attribute to realize the CLUE data channel is used only when the transport field of 'm' line is "UDP/DTLS/SCTP", where the dcmap-stream-id field indicates the actual SCTP stream, and the subprotocol field indicates the protocol "CLUE".

NOTE 10: The attribute(s) "a=fingerprint" (see IETF RFC 8122 [64]) shall be provided for an "m=" line in the local and remote descriptor if the MRFC requests the MRFP to establish the CLUE data channel.

NOTE 11: The support of the predefined ROI attribute in the SDP is optional. The attribute "a=predefined_ROI" (see TS 26.114 [41]) may be provided for an m-line in the local and remote descriptor if the MRFP supports the predefined ROI attributes, see also 3GPP TS 26.114 [41].

NOTE 12: If the MRFP performs media transcoding and if the rate adaptation for media endpoints using the enhanced bandwidth negotiation is supported by the MRFP, attribute(s) "a=bw-info" (defined in 3GPP TS 26.114 [41], clause 19) with direction "send" or "sendrecv" may be provided for an m-line and the selected IP payload type and applicable IP version in the remote descriptor.

**Table 5.15.2: Transport Protocol**

| Transport Protocol <proto> in m-line: | If the MG does not support the requested transport protocol, it shall reject the command with error code 449. |
|---|---|
| RTP/AVP | RTP profile according IETF RFC 3551 [21]. For voice and video services |
| RTP/AVPF | Extended RTP profile for RTCP-based Feedback (RTP/AVPF) according IETF RFC 4585 [40]. For voice and video services (NOTE 1). |
| TCP/BFCP | For floor control service, see IETF RFC 4583 [32]. (NOTE 1) |
| TCP/MSRP | For message service, see IETF RFC 4975 [34]. (NOTE 1) |
| TCP/TLS/BFCP | For floor control service with IMS media plane security, see IETF RFC 4583 [32]). (NOTE 1) |
| TCP/TLS/MSRP | For message service with IMS media plane security, see IETF RFC 4975 [34]). (NOTE 1) |
| UDP/DTLS/SCTP | Data channel support using IETF draft-ietf-mmusic-sctp-sdp [61] and IETF draft-ietf-mmusic-data-channel-sdpneg [62]. |
| NOTE 1: support optional. NOTE 2: Upper case TCP is defined by IETF RFC 4145 [39] and registered by IANA. | |

# 5.16 Optional support of SDP and Annex C information elements

*Specifies what SDP attributes and Annex C information elements may be supported.*

**Table 5.16.1:**

| Optional Annex C and SDP information elements: | | | |
|---|---|---|---|
| **Information Element** | **Annex C Support** | **SDP Support** | **Support Dependent on:** |
| <name> | <Annex C property> | <Describe> | <Describe> |

# 5.17 Procedures

## 5.17.1 Formats and Codes

Table 5.17.1.1 shows the parameters which are required for the procedures defined in the following clauses.

The coding rules applied in ITU-T Recommendation H.248.1 [3] for the applicable coding technique shall be followed for the UMTS capability set.

The binary encoding rules which are applicable to the defined Abstract Syntaxes are the Basic Encoding Rules for Abstract Syntax Notation One, defined in ITU-T Recommendation X.690 [41]. Specifically in accordance with ITU-T Recommendation X.690 [41] section 7.3, alternative encodings based on the definite and indefinite form of length are permitted by the basic encoding rules as a sender's option. Receivers shall support both alternatives.

Unsupported values of parameters or properties may be reported by the MGW and shall be supported by the MSC as such by using H.248.1 error code #449 "Unsupported or Unknown Parameter or Property Value". The unsupported or unknown value is included in the error text in the error descriptor.

**Table 5.17.1.1: Information Elements Used in Procedures**

| Signalling Object | H.248 Descriptor | Coding |
|---|---|---|
| Additional Bandwidth Properties | Remote Descriptor | The "a=bw-info" SDP attribute defined in 3GPP TS 26.114 [41], see table 5.15.1. |
| Allowed RTCP APP message types | Remote Descriptor | The "a=3gpp_mtsi_app_adapt" SDP attribute defined in 3GPP TS 26.114 [41]. |
| Announcement Cause | Events ObservedEvents | The "Meth" parameter in g/sc event per ITU-T Recommendation H.248.1 [3] Annex E.1.2 |
| Announcement Completed | Events ObservedEvents | The g/sc event per ITU-T Recommendation H.248.1 [3] Annex E.1.2 |
| Announcement Cycles | Signal | The "noc" parameter as per ITU-T Recommendation H.248.7 [5], Clause 4.3.1 |
| Announcement Direction | Signal | The "di" parameter as per ITU-T Recommendation H.248.7 [5], Clause 4.3.1 |
| Announcement Variant | Signal | The "av" parameter as per ITU-T Recommendation H.248.7 [5], Clause 4.3.1 |
| Arbitrary ROI Sent | Local Descriptor | The "rtcp-fb" SDP attribute defined in IETF RFC 4585 [30] to indicate the " Arbitrary ROI" RTCP feedback message expressed by the "3gpp-roi-arbitrary" parameter, as described in 3GPP TS 26.114 [41]. |
| Arbitrary ROI Received | Remote Descriptor | The "rtcp-fb" SDP attribute defined in IETF RFC 4585 [30] to indicate the " Arbitrary ROI" RTCP feedback message expressed by the "3gpp-roi-arbitrary" parameter, as described in 3GPP TS 26.114 [41]. |
| ASR Cause | Events ObservedEvents | The "rc" parameter in asr/asrfail event as per ITU-T Recommendation H.248.9a1 [26] Clause 12.2.1. |
| Cause | Events ObservedEvents | Encoded as "Meth" parameter in g/sc event per ITU-T Recommendation H.248.1 [3] Annex E.1.2 |
| Certificate Fingerprint | Local Descriptor or Remote Descriptor | The "a=fingerprint" SDP attribute(s) as defined in IETF RFC 8122 [64], see table 5.15.1. |
| CLUE Message Send | Signal | Defined as the "*mcbalg/sblm*" signal with the application protocol indicating "CLUE" in ITU-T Recommendation H.248.78 [65]. |
| CLUE Message Received | Events ObservedEvents | Defined according to *Detect Bearer Level Message* event with the application protocol indicating "CLUE" in ITU-T Recommendation H.248.78 [65]. |
| Codec List | Local Descriptor or Remote Descriptor | <fmt list> in a single SDP m-line. For a static RTP payload type, the codec type should be implied by the RTP payload type, if not then each codec type shall be provided in a separate SDP "a=rtpmap"-line and possibly additional SDP "a=fmtp"-line(s). For a dynamic RTP payload type, for each codec information on the codec type shall be provided in a separate SDP "a=rtpmap"-line and possibly additional SDP "a=fmtp"-line(s). |
| ConfID | ContextAttribute Descriptor | The "fconfid" parameter as per ITU-T Recommendation H.248.19a2 [33], Clause 10.6.1.1.It is defined as type integer as used over BFCP. |
| Context ID | NA | Binary Encoding: As per ITU-T Recommendation H.248.1 [3] Annex A. Textual Encoding:     As per ITU-T Recommendation H.248.1 [3] Annex B. |
| ControlledByChair | TerminationState Descriptor | List of Floor Ids controlled by this termination as a chair, specified by "cfi" as defined in Clause 10.1.1.2 of H.248.19a2 [33]. |
| Diffserv Code Point | Local Control | Defined according to the *Differentiated Services Code Point* property in ITU-T Recommendation H.248.52 [43]. |
| Digit | Observed Events | Encoding as per ITU-T Recommendation H.248.1 Annex E.6.2. Digits are reported individually by the MRFP. |
| DTMFTrigger | Signal Descriptor | "endinputkey, eik" see H.248.9a1 [26] Clause 16.3.1.1.16. |
| ECN Enabled | Local Descriptor or Remote Descriptor | Defined according to the "ECN Enabled" property in ITU-T Recommendation H.248.82 [44]. |
| ECN Failure | Events, Observed Events | Defined according to the "ECN Failure" Event in ITU-T Recommendation H.248.82 [44]. |
| ECN Failure Type | ObservedEvents Descriptor | As for the ObservedEventsDescriptor Parameter "Failure Type" in ITU-T Recommendation H.248.82 [44]. |
| ECN Initiation Method | Local Descriptor or Remote Descriptor | Defined according to "Initiation Method" property in ITU-T Recommendation H.248.82 [44]. |

| End of Recording Notification | Events ObservedEvents | Enables the MRFC to be informed of the end of a recording. Corresponds to aasrec/audfail (mrp/audfail) and aasrec/precsucc, (mrp/precsucc) events see ITU-T Recommendation H.248.9a1 [26] 12.2. |
|---|---|---|
| Establish TCP Connection | Signals | Defined according to the Establish BNC signal (tcpbcc/EstBNC) in ITU-T Recommendation H.248.89 [54]. |
| Establish (D)TLS session | Signals | Defined according to the Establish BNC signal (tlsbsc/EstBNC) in ITU-T Recommendation H.248.90 [55] and for DTLS usage in ITU-T Recommendation H.248.93 [63]. |
| Extended Header for CVO | Local Descriptor or Remote Descriptor | "extmap" attribute in SDP a-line as defined in IETF RFC 5285 [45], see table 5.15.1. |
| Extended RTP Header for Sent ROI | Local Descriptor or Remote Descriptor | "extmap" attribute in SDP a-line to pass on the ROI extended RTP header as defined by IETF RFC 5285 [45] for carriage of predefined and/or arbitrary ROI information, see table 5.15.1 |
| FloorControlAlgorithm | Context Attrribute (NOTE 1) | Sub-list of (Floorid, Algorithm). "fca" as defined in Clause 10.4.1.2 of H.248.19a2[33]. |
| FloorID | Local Descriptor | "a= floorid" SDP line as specified in Table 5.15.1. |
| FloorRequestResult | Signal Descriptor | The "res" parameter as per ITU-T Recommendation H.248.19a2 [33], Clause 10.5.3.1.1.2. It is defined as Boolean (success or fail) |
| FloorResAssociations | Context Attribute (NOTE 1) | The "fsa" parameter as per ITU-T Recommendation H.248.19a2 [33], Clause 10.6.1.2. It is defined as sub-list of (Floorid, StreamID). |
| FloorStatus | Observed Events | "Floor Status, fs" as defined in H.248.19 a2 [33]. This is a list of FloorIds and status (e.g. granted, revoked) |
| Generic Image Attribute | Local Descriptor or Remote Descriptor | "imageattr" attribute in SDP a-line as defined in IETF RFC 6236 [46], see table 5.15.1. |
| ICE host candidate request | Local Descriptor | The "a=candidate" SDP attribute defined in IETF RFC 5245 [48] of type "host" with the transport, port and priority parameters with wildcard sign "$" to request the allocation of a host candidate |
| ICE host candidate | Local Descriptor | The "a=candidate" SDP attribute defined in IETF RFC 5245 [48] |
| ICE lite indication | Local Descriptor | The "a=ice-lite" SDP attribute defined in IETF RFC 5245 [48]. |
| ICE password request | Local Descriptor | The "a=ice-pwd" SDP attribute defined in IETF RFC 5245 [48] with wildcard sign "$". |
| ICE password | Local Descriptor | The "a=ice-pwd" SDP attribute defined in IETF RFC 5245 [48]. |
| ICE received candidate | Remote Descriptor | The "a=candidate" SDP attribute defined in IETF RFC 5245 [48] |
| ICE received password | Remote Descriptor | The "a=ice-pwd" SDP attribute defined in IETF RFC 5245 [48]. |
| ICE received Ufrag | Remote Descriptor | The "a=ice-ufrag" SDP attribute defined in IETF RFC 5245 [48]. |
| ICE Ufrag request | Local Descriptor | The "a=ice-ufrag" SDP attribute defined in IETF RFC 5245 [48] with wildcard sign "$". |
| ICE Ufrag | Local Descriptor | The "a=ice-ufrag" SDP attribute defined in IETF RFC 5245 [48]. |
| ICE Connectivity Check Result | Events, Observed Events | Defined according to *Connectivity Check Result* event in ITU-T Recommendation H.248.50 [47]. |
| ICE Send Connectivity Check | Signals | Defined as the ostuncc/scc signal in ITU-T Recommendation H.248.50 [47]. |
| ICE New Peer Reflexive Candidate | Events, Observed Events | Defined according to *New Peer Reflexive Candidate* event in ITU-T Recommendation H.248.50 [47]. |
| ICE Send Additional Connectivity Check | Signals | Defined as the ostuncc/sacc signal in ITU-T Recommendation H.248.50 [47]. |
| IncMessageFilters | LocalControl Descriptor | "Incoming Message Filters, imf" parameter in H.248.69 [35] Clause 13.1.1, which is defined as string and complies with Sieve [IETF RFC5228] with the exceptions described in H.248.69 [35] Clause 13.6. |
| IP Address | Local Descriptor or Remote Descriptor | <connection address> in SDP "c-line" |
| Iterations | Signal | " Iterations, it"  parameter in H.248.9a1 [26] Clause 13.3.1.1.3 or Clause 13.3.2.1.3 |
| MaxFloorHolder | Context Attribute (NOTE 1) | Sub-list of (FloorID, Number). "mfu" as defined in Clause 10.4.1.2 of H.248.19a2 [33] |
| Maximum Record Time | Signal | "Record Length Timer, rlt"  parameter in H.248.9a1 [26] Clause 16.3.1.1.8 for multimedia recording or Clause 10.3.1.1.8 for audio recording |
| Media Identifier | Signal | TBD |
| Mediatype | Local Descriptor or Remote Descriptor | <media> in sdp m-line "audio" for voice service, and "image" for T.38 service. |
| MessageContentType | | TBD as enumeration to indicate the content type of message. (e.g. video, audio) |

| MessageContentFmt | | TBD as enumeration to indicate the content format (e.g. mpeg, jpeg for picture) |
|---|---|---|
| MessageIdentifier | Signal | "mcr" parameter in the mess/sm signal in H.248.69 [35] Clause 10.3.1.1.2, which is defined as URI that points to the message data that shall be sent. |
| MessagePlayResultReport | Signal | "fr" or "sr" parameter in the mess/sm signal in H.248.69 [35], which is defined as Enumeration to indicate the request of report result of message play (Success Report, Failure Report, Both or None) |
| MessagePlayCause | ObservedEvents | "sc" parameter in the mess/msrs event in H.248.69 [35] Clause 10.2.1.2.2 , which is defined as Enumeration to notify the result of the message play. |
| MessageRecordFileIdentifier | Signal | "sl" parameter in the recmess/rm signal in H.248.69 [35] Clause 15.3.1.1.1, which is defined as a URI where the messages are to be stored. |
| MessagesReceivedNumQuota | Events | "mrq" parameter in the msrpstat/mquota event in H.248.69 [35] Clause 8.2.1.1.2, which is defined as integer to define the quota for number of messages that may be received on the termination for the messaging Stream. |
| MessagesReceivedVolQuota | Events | "mrv" parameter in the msrpstat/mquota event in H.248.69 [35] Clause 8.2.1.1.4, which is defined as integer to define the quota for cumulative total size of messages that may be received on the Termination for the messaging Stream. |
| MessagesreceivedNum | ObservedEvents Statistics | "nmr" parameter in the msrpstat/mquota event or statistics in H.248.69 [35], which is defined as integer to define the number of messages that have been received on the termination for the messaging Stream. |
| MessagesReceivedVol | ObservedEvents Statistics | "vmr" parameter in the msrpstat/mquota event or statistics in H.248.69 [35], which is defined as integer to define the cumulative total size of messages that have been received on the Termination for the messaging Stream. |
| MessagesSentNumQuota | Events | "msq" parameter in the msrpstat/mquota event in H.248.69 [35] Clause 8.2.1.1.1, which is defined as integer to define the quota for number of messages that may be sent from the termination for the messaging Stream. |
| MessagesSentVolQuota | Events | "msv" parameter in the msrpstat/mquota event in H.248.69 [35] Clause 8.2.1.1.3, which is defined as integer to define the quota for cumulative total size of messages that may be sent from the Termination for the messaging Stream. |
| MessagesSentNum | ObservedEvents Statistics | "nms" parameter in the msrpstat/mquota event or or statistics in H.248.69 [35], which is defined as integer to define the number of messages that have been sent from the termination for the messaging Stream. |
| MessagesSentVol | ObservedEvents Statistics | "vms" parameter in the msrpstat/mquota event or statistics in H.248.69 [35], which is defined as integer to define the cumulative total size of messages that may be sent from the Termination for the messaging Stream. |
| MSRP session identity | Local Descriptor or Remote Descriptor | <session-id> in SDP "a= path:MSRP-URI"-line. |
| Notify TCP Connection Establishment Failure Event | ObservedEvents | As for the ObservedEvent Parameter in subclause E.1.2 of ITU-T Recommendation H.248.1 [3] "General cause". |
| Notify (D)TLS session establishment Failure Event | ObservedEvents | As for the ObservedEvent Parameter in subclause E.1.2 of ITU-T Recommendation H.248.1 [3] "General cause". |
| OutMessageFilters | LocalControl Descriptor | "Outgoing Message Filters, omf" parameter in H.248.69 [35] Clause 13.1.3, which is defined as string and complies with Sieve [IETF RFC5228] with the exceptions described in H.248.69 [35] Clause 13.6. |
| Port | Local Descriptor or Remote Descriptor | <port> in SDP m-line. |
| Predefined ROI Sent | Local Descriptor | The "rtcp-fb" SDP attribute defined in IETF RFC 4585 [30] to indicate the "Predefined ROI" RTCP feedback message expressed by the "3gpp-roi-predefined" parameter, as described in 3GPP TS 26.114 [41]. |
| Predefined ROI Received | Remote Descriptor | The "rtcp-fb" SDP attribute defined in IETF RFC 4585 [30] to indicate the "Predefined ROI" RTCP feedback message expressed by the "3gpp-roi-predefined" parameter, as described in 3GPP TS 26.114 [41]. |

| Pre-Shared Key | LocalControl Descriptor | Traffic-Encrypting Key (TEK) associated with the Crypto Session (CS) as defined in IETF RFC 6043 [56] and Annex H of 3GPP TS 33.328 [57] that will be used in TLS handshake. (NOTE 2) |
|---|---|---|
| Priority Information | NA | Priority Indicator (subclause 6.1.1 of ITU-T Recommendation H.248.1 [3]) Binary Encoding: Encoding as per ITU-T Recommendation H.248.1 [3] Annex A "priority" context attribute Textual Encoding: Encoding as per ITU-T Recommendation H.248.1 [3] Annex B "priority" context attribute |
| Recognition Result | ObservedEvents | "asrr" parameter to "asrsucc" event in H.248.9a1 [26] Clause 12.2.2.2.1. Each result may be able to be structured by multiple parts in time sequence with the input time, may be able to include the text token that the value will correspond to tokens as defined by the SRGS grammar, may be able to include the interpretation of application specific markup, may be able to include the confidence score that represents the recognition quality. |
| Record File Format | Signal | To Be Defined |
| Record File Identifier | Signal | "rid" parameter in playrec signal H.248.9a1 [26] Clause 16.3.1.1.9 for multimedia recording or Clause 10.3.1.1.9 for audio recording |
| Release TCP Connection | Signals | Defined according to the Release BNC signal (tcpbcc/RelBNC) in ITU-T Recommendation H.248.89 [54]. |
| Release TLS session | Signals | Defined according to the Release BNC signal (tlsbsc/RelBNC) in ITU-T Recommendation H.248.90 [55]. |
| Reserve_Value | Local Control | ITU-T Recommendation H.248.1 [3] Mode property. Binary Encoding: Encoding as per ITU-T Recommendation H.248.1 Annex A "reserveValue" Textual Encoding: Encoding as per ITU-T Recommendation H.248.1 Annex B "reservedValueMode". |
| RtcpbwRS | Local Descriptor or Remote Descriptor | <bandwidth> in SDP "b:RS"-line. |
| RtcpbwRR | Local Descriptor or Remote Descriptor | <bandwidth> in SDP "b:RR"-line. |
| RTPpayload | Local Descriptor or Remote Descriptor | <fmt list> in SDP m-line |
| SCTP Max Message Size | Local Descriptor or Remote Descriptor | The "a=max-message-size" SDP attribute as defined in IETF draft-ietf-mmusic-sctp-sdp [61], see table 5.15.1. |
| SCTP Port | Local Descriptor or Remote Descriptor | The "a=sctp-port" SDP attribute as defined in IETF draft-ietf-mmusic-sctp-sdp [61], see table 5.15.1. |
| SCTP Stream ID | Local Descriptor or Remote Descriptor | <dcmap-stream-id> in SDP "a=dcmap" line as defined in IETF draft-ietf-mmusic-data-channel-sdpneg [62], see table 5.15.1. |
| SCTP Subprotocol | Local Descriptor or Remote Descriptor | <subprotocol-opt> in SDP "a=dcmap" line as defined in IETF draft-ietf-mmusic-data-channel-sdpneg [62], see table 5.15.1. |
| SDPCapNeg configuration | Local Descriptor or Remote Descriptor | The SDP attributes for SDP capability negotiation according to IETF RFC 5939 [69]. |
| SDPCapNeg Supported Capabilities | Termination State | Defined according to *SDPCapNeg Extensions* property in ITU-T Recommendation H.248.80 [70]. |
| SenderAddr | | TBD |
| SRGS Grammar | Signal | "grammar file, gf" parameter in asr/asr signal in H.248.9a1 [26] Clause 12.3.1.1.2 |
| SRGS grammar URI | Signal | " Recognition grammar identifier, rgid" parameter in asr/ asrid signal in H.248.9a1 [26] Clause 12.3.2.1.2 |
| SSML | Signal | "an" parameter in the aastts/play signal in H.248.9a1 [26] Clause 14.3.1.1.1 |
| StatRepReason | ObservedEvents | "qreach" parameter in the msrpstat/mquota event in H.248.69 [35] Clause 8.2.1.2.1, which is defined as enumeration to indicate the quota that has triggered the reporting of the event. |
| StatValTime | Events | "tm" parameter in the msrpstat/mquota event in H.248.69 [35] Clause 8.2.1.1.5, which is defined as integer to define how long for the quotas associated are active for. |
| Stream Number | Stream | Encoding as per ITU-T Recommendation H.248.1 Annex B "Stream"/"ST". For a single stream, this may be omitted by the MRFC. |
| STUN server request | LocalControl | Encoding as per ITU-T Recommendation H.248.50 [47] "MG Act-as STUN Server" (mgastuns) package "Act-as STUN Server" (astuns, 0x0001) property. |

| Termination heartbeat | Events ObservedEvents | The hangterm/thb event as per ITU-T Recommendation H.248.36 [30] Clause 5.2.1. |
|---|---|---|
| Termination ID | NA | Binary Encoding: As per ITU-T Recommendation H.248.1 [3] Annex A. Textual Encoding:     As per ITU-T Recommendation H.248.1 [3] Annex B. |
| Timing | Events | As in dd package H.248.1 [3] Annex E.6.2, (end tone detected shall be used) |
| Tone Completed | Events ObservedEvents | "g/sc" see H.248.1 [3] Annex E.1.2 |
| Tone Duration | Signal | As in the respective tone package |
| Tone Identity | Signal | Encoding as per ITU-T Recommendation H.248.1 Annex B and the package which defines the tone (Tone Signal Ids only). |
| Transaction ID | NA | Binary Encoding: As per ITU-T Recommendation H.248.1 [3] Annex A. Textual Encoding:     As per ITU-T Recommendation H.248.1 [3] Annex B. |
| TTS Completed | Events ObservedEvents | "g/sc" see H.248.1 [3] Annex E.1.2 if successful, aastts/ttsfail H.248.9a1 [26] Clause 14.2.1 if not successful. |
| Transport | Local Descriptor or Remote Descriptor | <transport> in SDP m-line, see 5.15 |
| UserID | Local Descriptor | "a= userid" SDP line as specified in Table 5.15.1. |
| NOTE 1:   H.248.1 version 3 required. NOTE 2:   Pre-Shared Key information element needs to be specified in ITU-T Recommendation H.248.90 [55]. | | |

## 5.17.2   Call Related Procedures

### 5.17.2.1     General

This section describes the various call related procedures performed by the MRFP, which are listed in table 15.17.2.1.

**Table 5.17.2.1.1: MRFP Call Related Procedures**

| Transaction defined in 3GPP TS 23.333 [25] | Transaction used from TS 29.163 [27] | Supported | Comment |
|---|---|---|---|
| Reserve IMS Resources | Reserve IMS Connection point | Mandatory | See 5.17.2.2 |
| Configure IMS Resources | Configure IMS Resources | Mandatory | See 5.17.2.3 |
| Reserve and Configure IMS Resources | Reserve IMS Connection Point and configure remote resources | Mandatory | See 5.17.2.4 |
| Release IMS termination | Release IMS termination | Mandatory | See 5.17.2.5 |
| Detect DTMF | Detect IMS RTP Tel Event | Optional | See 5.17.2.18 |
| Stop DTMF Detection | End IMS RTP Tel Event | Optional | See 5.17.2.20 |
| Report DTMF | Notify IMS RTP Tel Event | Optional | See 5.17.2.19 |
| Start Playing Multimedia | n.a for re-use | Optional | See 5.17.2.24 |
| Stop Playing Multimedia | n.a for re-use | Optional | See 5.17.2.25 |
| Playing Multimedia Completed | n.a for re-use | Optional | See 5.17.2.26 |
| Send Tone | n.a for re-use | Optional | See 5.17.2. 6 |
| Stop Tone | IMS Stop Tone | Optional | See 5.17.2.7 |
| Tone Completed | IMS Tone Completed | Optional | See 5.17.2.8 |
| Start Announcement | n.a for re-use | Optional | See 5.17.2.9 |
| Stop Announcement | Stop Announcement | Optional | See 5.17.2.10 |
| Announcement Completed | Announcement Completed | Optional | See 5.17.2.11 |
| Start Audio Record | n.a for re-use | Optional | See 5.17.2.15 |
| Stop Audio Record | n.a for re-use | Optional | See 5.17.2.16 |
| Audio Record Complete | n.a for re-use | Optional | See 5.17.2.17 |
| Start Multimedia Record | n.a for re-use | Optional | See 5.17.2.27 |
| Stop Multimedia Record | n.a for re-use | Optional | See 5.17.2.28 |
| Multimedia Record Completed | n.a for re-use | Optional | See 5.17.2.29 |
| Start TTS | n.a for re-use | Optional | See 5.17.2.12 |
| Stop TTS | n.a for re-use | Optional | See 5.17.2.13 |
| TTS Completed | n.a for re-use | Optional | See 5.17.2.14 |
| Start ASR | n.a for re-use | Optional | See 5.17.2.21 |
| Stop ASR | n.a for re-use | Optional | See 5.17.2.23 |
| ASR Completed | n.a for re-use | Optional | See 5.17.2.22 |
| Adhoc Audio Conference | n.a for re-use | Optional | See 5.17.2.30 |
| Multi-Media Conferencing | n.a for re-use | Optional | See 5.17.2.31 |
| Termination heartbeat Indication | Termination heartbeat Indication | Mandatory | See 5.17.2.32 |
| Configure BFCP Termination | n.a for re-use | Optional | See 5.17.2.33 |
| Configure Conference For Floor Control | n.a for re-use | Optional | See 5.17.2.34 |
| Designate Floor Chair | n.a for re-use | Optional | See 5.17.2.35 |
| Floor Request Decision | n.a for re-use | Optional | See 5.17.2.36 |
| Report Floor Request Decision | n.a for re-use | Optional | See 5.17.2.37 |
| Modify Media | n.a for re-use | Optional | See 5.17.2.38 |
| Confirm Media Update | n.a for re-use | Optional | See 5.17.2.39 |
| Start Playing Message | n.a for re-use | Optional | See 5.17.2.40 |
| Stop Playing Message | n.a for re-use | Optional | See 5.17.2.41 |
| Playing Message Completed | n.a for re-use | Optional | See 5.17.2.42 |
| Start Message Record | n.a for re-use | Optional | See 5.17.2.43 |
| Stop Message Record | n.a for re-use | Optional | See 5.17.2.44 |
| Message Record Completed | n.a for re-use | Optional | See 5.17.2.45 |
| Configure Granted Quota | n.a for re-use | Optional | See 5.17.2.46 |
| Report Message Statistics | n.a for re-use | Optional | See 5.17.2.47 |
| Configure Filtering Rules | n.a for re-use | Optional | See 5.17.2.48 |
| ECN Failure Indication | n.a for re-use | Optional | See 5.17.2.49 |
| ICE Connectivity Check Result Notification | n.a for re-use | Optional | See 5.17.2.50 Only applicable if full ICE is supported |
| ICE New Peer Reflexive Candidate Notification | n.a for re-use | Optional | See 5.17.2.51 Only applicable if full ICE is supported |

| Notify TCP connection establishment Failure Indication | n.a for re-use | Optional | See 5.17.2.52 |
|---|---|---|---|
| Notify TLS session establishment Failure Indication | n.a for re-use | Optional | See 5.17.2.53 |
| CLUE Message Send | n.a for re-use | Optional | See 5.17.2.54 |
| CLUE Messge Received | n.a for re-use | Optional | See 5.17.2.55 |
| NOTE: A procedure defined in this table can be combined with another procedure in the table. This means that they can share the same contextID and termination ID(s) and that they can be combined in the same H.248 command. | | | |

### 5.17.2.2 Reserve IMS Resources

The MRFC sends an ADD request command as in Table 5.17.2.2.1.

**Table 5.17.2.2.1: Reserve IMS Resources Request**

| Address Information | Control information | Bearer information |
|---|---|---|
| Local Descriptor {<br>  Port = $<br>  IP Address = $<br>If media is "message":<br>  MSRP session identity = $<br>If media is "application":<br>  If CLUE data channel required:<br>    SCTP Port = $<br>} | Transaction ID = x<br>Context ID= $<br>If MPS call/session:<br>  Priority Indicator = x<br>Termination ID = $<br>If Stream Number specified:-<br>  Stream Number<br>If Resources for multiple Codecs<br>    required:<br>    Reserve_Value<br>NotificationRequested (Event ID = x,<br>"termination heartbeat")<br>If ECN transparent support required:<br>  ECN Enable = "True"<br>  Initiation Method = "inactive"<br><br>If ECN Endpoint support required<br>    ECN Enable = "True"<br>  Initiation Method = "ECN Initiation<br>  Method" (NOTE 1)<br><br>    If notification of ECN Failure<br>      Report:<br>      NotificationRequested<br>  (Event ID = x,"ECN Failure")<br><br>If diffserv required:<br>  Diffserv Code Point<br><br>If ICE is applied:<br>  STUN server request<br><br>If indication on TCP connection<br>establishment failure requested:<br>    NotificationRequested<br>    (Event ID = x, "TCP connection<br>    establishment failure")<br><br>If indication on CLUE message<br>received requested:<br>    NotificationRequested<br>      (Event ID = x, "CLUE<br>      message received") | Local Descriptor {<br>If media is "audio" or "video":<br>  Codec List = Codec List<br>  RTP Payloads = RTP Payload<br>If media is "video":<br>  If CVO required:<br>    Extended Header for CVO<br>    (NOTE 2)<br>If media is "video":<br>  If imageattr negotiation:<br>    Generic Image Attribute<br>    (NOTE 3)<br>If media is "video":<br>  If Predefined ROI required:<br>    Extended Header For Sent ROI<br>    If termination towards ROI-<br>sending client:<br>      RTCP feedback for Predefined<br>ROI Sent<br>  If Arbitrary ROI required:<br>    Extended Header For Sent ROI<br>    If termination towards ROI-<br>sending client:<br>      RTCP feedback for Arbitrary<br>ROI Sent<br><br>If media is "message":<br>  If IMS media plane security<br>  required:<br>    Transport = TCP/TLS/MSRP<br>  Else<br>    Transport = TCP/MSRP<br>If media is "application":<br>  If CLUE data channel required:<br>    Transport = UDP/DTLS/SCTP<br>    Certificate fingerprint = $<br>    SCTP Stream ID<br>    Subprotocol = CLUE<br>    Max message size = $<br><br>If ICE is applied:<br>  ICE host candidate request<br>  ICE password request<br>  ICE Ufrag request<br><br>If SDPCapNeg is signalled to the<br>gateway:<br>  SDPCapNeg configuration<br>  }<br>    or<br>    Local Descriptor {<br>      RTP Payloads = $<br>} |
| NOTE 1:  This shall be set to a value other than "inactive".<br>NOTE 2:  If the MRFP supports the extended RTP header it shall pass any received extended RTP header with CVO bits on to succeeding RTP streams. If the MRFP transcodes between video payloads and it supports the extended RTP header with CVO bits it shall keep the video orientation unchanged during the transcoding and convey received RTP CVO header bytes on the succeeding RTP streams after transcoding associated packets as specified in 3GPP TS 26.114 [41], subclause 7.4.5.<br>NOTE 3:  The support of the generic image attributes is optional for the MRFP. The list of image sizes per payload type supported by the MRFP is preconfigured in the MRFC. If none of the image sizes received within an SDP body on Mr interface is supported by the MRFP then the MRFC will not send the generic image attribute parameter to the MRFP. | | |

On reserving the IMS termination, the MRFP responds as in Table 5.17.2.2.2.

**Table 5.17.2.2.2: Reserve IMS Resources Request Acknowledge**

| Address Information | Control information | Bearer information |
|---|---|---|
| Local Descriptor {<br>  Port<br>  IP Address<br>If media is "message":<br>  MSRP session identity<br>If media is "application":<br>  If CLUE data channel required:<br>    SCTP Port<br>} | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>Stream Number | Local Descriptor {<br>If media is "audio" or "video":<br>  Codec List<br>  RTP Payloads<br>If media is "video":<br>  If CVO extension header<br>    provided in the request:<br>      Extended Header for CVO<br>If media is "video":<br>  If imageattr negotiation:<br>    Generic Image Attribute<br>If media is "video":<br>  If Predefined ROI provided in the request:<br>    Extended Header For Sent ROI<br>    If termination towards ROI-sending client:<br>      RTCP feedback for Predefined ROI Sent<br>  If Arbitrary ROI provided in the request:<br>    Extended Header For Sent ROI<br>    If termination towards ROI-sending client:<br>      RTCP feedback for Arbitrary ROI Sent<br><br>If ICE is applied:<br>  ICE host candidate<br>  ICE password<br>  ICE Ufrag<br>  If ICE lite implementation<br>    ICE lite indication<br><br>If media is "message":<br>  If IMS media plane security<br>  required:<br>    Transport = TCP/TLS/MSRP<br>  Else<br>    Transport = TCP/MSRP<br>If media is "application":<br>  If CLUE data channel required:<br>    Transport = UDP/DTLS/SCTP<br>    Certificate fingerprint<br>    SCTP Stream ID<br>    Subprotocol = CLUE<br>    Max message size<br><br>If SDPCapNeg is signalled to the gateway:<br>  SDPCapNeg configuration<br>} |

### 5.17.2.3    Configure IMS Resources

The MRFC sends a MODIFY request command as in Table 5.17.2.3.1.

**Table 5.17.2.3.1: Configure IMS Resources Request**

**Table 5.17.2.3.1: Configure IMS Resources Request**

| **Address Information** | **Control information** | **Bearer information** |
|---|---|---|

| If local resources are modified:<br>Local Descriptor {<br>Port<br>IP Address<br>If media is "message":<br>MSRP session identity<br>}<br>If remote resources are modified:<br>Remote Descriptor {<br>Port<br>IP Address<br>If media is "message":<br>MSRP session identity<br>If media is "application":<br>If CLUE data channel required:<br>SCTP Port<br>} | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>If Stream Number specified:<br>Stream Number<br><br>If Resources for multiple Codecs<br>required:<br>Reserve_Value<br><br>If detection of hanging termination is<br>requested: (NOTE1)<br>NotificationRequested (Event ID = x,<br>"termination heartbeat")<br>If ECN transparent support required:<br>ECN Enable = "True"<br>Initiation Method = "inactive"<br><br>If ECN Endpoint support required<br>ECN Enable = "True"<br>Initiation Method = "ECN Initiation<br>Method" NOTE2<br><br>If notification of ECN Failure<br>Report:<br>NotificationRequested (Event<br>ID<br>= x,"ECN failure")<br><br>If full ICE is applied:<br>Send Connectivity Check<br>("Control")<br>If notification of ICE Connectivity<br>Check Result Report:<br>NotificationRequested<br>(Event ID= xx,<br>"Connectivity Check Result")<br>If notification of New Peer<br>Reflexive Candidate:<br>NotificationRequested<br>(Event ID = xy," New Peer<br>Reflexive Candidate ")<br>Send Additional<br>Connectivity Check ("Control")<br><br>If TCP connection establishment<br>required:<br>Establish TCP connection<br><br>If indication on TCP connection<br>establishment failure requested:<br>NotificationRequested<br>(Event ID = x, "TCP connection<br>establishment failure")<br><br>f (D)TLS session establishment<br>required:<br>Establish (D)TLS session<br><br>If indication on (D)TLS session<br>establishment failure requested:<br>NotificationRequested<br>(Event ID = x, "(D)TLS<br>session establishment failure")<br><br>If IMS media plane security required:<br>Pre-Shared Key (NOTE 6) | If local resources are modified:<br>Local Descriptor {<br>If media is "audio" or "video":<br>Codec List<br>RTP Payloads<br>If media is "video":<br>If CVO required:<br>Extended Header for CVO<br>(NOTE 3)<br>If media is "video":<br>If imageattr negotiation:<br>Generic Image Attribute<br>(NOTE 4)<br>If media is "video":<br>If Predefined ROI required:<br>Extended Header For Sent<br>ROI<br>If termination towards ROI-<br>sending client:<br>RTCP feedback for<br>Predefined ROI Sent<br>If Arbitrary ROI required:<br>Extended Header For Sent<br>ROI<br>If termination towards ROI-<br>sending client:<br>RTCP feedback for Arbitrary<br>ROI Sent<br><br>If media is "message":<br>If IMS media plane security<br>required:<br>Transport = TCP/TLS/MSRP<br>Else<br>Transport = TCP/MSRP<br>If media is "application":<br>If CLUE data channel required:<br>Transport = UDP/DTLS/SCTP<br>Certificate fingerprint<br>Max message size<br><br>If SDPCapNeg is signalled to the<br>gateway:<br>SDPCapNeg configuration<br>}<br>If remote resources are modified:<br>Remote Descriptor {<br>If media is "audio" or "video":<br>Codec List<br>RTP Payloads<br>If rate adaptation for media<br>endpoints:<br>Additional Bandwidth<br>Properties (NOTE 7)<br>If media is "video":<br>If CVO required:<br>Extended Header for CVO<br>(NOTE 3)<br>If media is "video":<br>If imageattr negotiation:<br>Generic Image Attribute<br>(NOTE 4)<br>If media is "video":<br>If Predefined ROI required:<br>Extended Header For Sent<br>ROI<br>If termination towards ROI-<br>receiving client: |
|---|---|---|

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|  |  | RTCP feedback for Predefined ROI Received<br>    If Arbitrary ROI required:<br>        Extended Header For Sent ROI<br>        If termination towards ROI-receiving client:<br>           RTCP feedback for Arbitrary ROI Received<br><br> If media is "message"<br>  If IMS media plane security required:<br>    Transport = TCP/TLS/MSRP<br>  Else<br>    Transport = TCP/MSRP<br><br> If RTCP APP messages allowed<br>  Allowed RTCP APP message types<br><br>If ICE is applied:<br>  ICE received candidate<br>  ICE received password<br>  ICE received Ufrag<br>  (NOTE 5)<br><br>If SDPCapNeg is signalled to the gateway:<br>  SDPCapNeg configuration<br>} |
| NOTE1: | It is highly recommended to request termination heartbeat notification to detect hanging context and termination in the MRFP that may result e.g. from a loss of communication between the MRFC and the MRFP. |  |
| NOTE 2: | This shall be set to a value other than "inactive". |  |
| NOTE 3: | If the MRFP supports the extended RTP header it shall pass any received extended RTP header with CVO bits on to succeeding RTP streams. If the MRFP transcodes between video payloads and it supports the extended RTP header with CVO bits it shall keep the video orientation unchanged during the transcoding and convey received RTP CVO header bytes on the succeeding RTP streams after transcoding associated packets as specified in 3GPP TS 26.114 [41], subclause 7.4.5. |  |
| NOTE 4: | The support of the generic image attributes is optional for the MRFP. The list of image sizes per payload type supported by the MRFP is preconfigured in the MRFC. If none of the image sizes received within an SDP body on Mr interface is supported by the MRFP then the MRFC will not send the generic image attribute parameter to the MRFP. |  |
| NOTE 5: | The support of ICE received candidate, ICE received password, ICE received Ufrag are optional for ICE lite, as specified in 3GPP TS 23.333 [25]. |  |
| NOTE 6: | The MRFC and the MRFP may support IMS media plane security i.e. end-to-end media security for session-based messaging (MSRP) using the pre-shared key (PSK) ciphersuites for TLS (specified in IETF RFC 4279 [58] and profiled as specified in Annex E of 3GPP TS 33.310 [59]). The list of PSK ciphersuites for TLS supported by the MRFP is preconfigured in the MRFC. |  |
| NOTE 7: | The support of rate adaptation for media endpoints using the additional bandwidth properties is optional for the MRFP. If media transcoding is required the MRFC may provide for the selected payload type and the used IP version the additional bandwidth properties. |  |

The MRFP responds as in 5.17.2.3.2.

**Table 5.17.2.3.2: Configure IMS Resources Request Acknowledge**

**Table 5.17.2.3.2: Configure IMS Resources Request Acknowledge**

| Address Information | Control information | Bearer information |
|---------------------|---------------------|---------------------|

| If local resources were provided in request:<br>  Local Descriptor {<br>    Port<br>    IP Address<br>  If media is "message":<br>    MSRP session identity<br>  }<br>If remote resources are provided in request:<br>  Remote Descriptor {<br>    Port<br>    IP Address<br>  If media is "message":<br>    MSRP session identity<br>  } | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>If Stream Number Specified:<br>  Stream Number | If local resources were provided in request:<br>  Local Descriptor {<br>  If media is "audio" or "video":<br>    Codec List<br>    RTP Payloads<br>  If media is "video":<br>    If CVO extension header provided in the request:<br>      Extended Header for CVO<br>  If media is "video":<br>    If imageattr negotiation:<br>      Generic Image Attribute<br>  If media is "video":<br>    If Predefined ROI provided in the request:<br>      Extended Header For Sent ROI<br>      If termination towards ROI-sending client:<br>        RTCP feedback for Predefined ROI Sent<br>    If Arbitrary ROI provided in the request:<br>      Extended Header For Sent ROI<br>      If termination towards ROI-sending client:<br>        RTCP feedback for Arbitrary ROI Sent<br><br>  If media is "message":<br>    If IMS media plane security required:<br>      Transport = TCP/TLS/MSRP<br>    Else<br>      Transport = TCP/MSRP<br>  }<br><br>If remote resources are provided in request:<br>  Remote Descriptor {<br>  If media is "audio" or "video":<br>    Codec List<br>    RTP Payloads<br>    If rate adaptation for media endpoints:<br>      Additional Bandwidth Properties<br>  If media is "video":<br>    If CVO extension header provided in the request:<br>      Extended Header for CVO<br>  If media is "video":<br>    If imageattr negotiation:<br>      Generic Image Attribute<br>  If media is "video":<br>    If Predefined ROI provided in the request:<br>      Extended Header For Sent ROI<br>      If termination towards ROI-receiving client:<br>        RTCP feedback for Predefined ROI Received<br>    If Arbitrary ROI provided in the request: |

| | | Extended Header For Sent ROI<br>    If termination towards ROI-receiving client:<br>        RTCP feedback for Arbitrary ROI Received<br><br>If media is "message":<br>  If IMS media plane security required:<br>      Transport = TCP/TLS/MSRP<br>  Else<br>      Transport = TCP/MSRP<br>If media is "application":<br>  If CLUE data channel required:<br>      Transport =<br>          UDP/DTLS/SCTP<br>} |
|---|---|---|

### 5.17.2.4    Reserve and Configure IMS Resources

The MRFC sends an ADD request command as in Table 5.17.2.4.1.

**Table 5.17.2.4.1: Reserve and Configure IMSresources Request**

| Address Information | Control information | Bearer information |
|---|---|---|

| | | |
|---|---|---|
| Local Descriptor {<br>  Port = $<br>  IP Address = $<br>If media is "message":<br>  MSRP session identity = $<br>If media is "application":<br>  If CLUE data channel required:<br>    SCTP Port = $<br>}<br>Remote Descriptor {<br>  Port<br>  IP Address<br>If media is "message":<br>  MSRP session identity<br>If media is "application":<br>  If CLUE data channel required:<br>    SCTP Port<br>} | Transaction ID = x<br>Context ID = $<br>If MPS call/session:<br>  Priority Indicator = x<br>Termination ID = $<br><br>If Stream Number Specified:<br>  Stream Number<br>If Resources for multiple Codecs<br>shall be reserved:<br>  Reserve_Value<br><br>If detection of hanging termination is<br>requested: (NOTE1)<br>NotificationRequested (Event ID = x,<br>"termination heartbeat")<br><br>If ECN transparent support required:<br>ECN Enable = "True"<br>  Initiation Method = "inactive"<br><br>If ECN Endpoint support required<br>  ECN Enable = "True"<br>  Initiation Method = "ECN Initiation<br>  Method" NOTE2<br><br>  If notification of ECN Failure<br>    Report:<br>     NotificationRequested (Event<br>ID<br>  = x,"ECN Failure")<br><br>If diffserv required:<br>  Diffserv Code Point<br><br>If ICE is applied:<br>  STUN server request<br>  If full ICE is applied<br>    Send Connectivity Check<br>    ("Control")<br>    If notification of ICE Connectivity<br>    Check Result Report:<br>      NotificationRequested<br>(Event ID = xx,"Connectivity Check<br>     Result")<br>    If notification of New Peer<br>Reflexive Candidate:<br>      NotificationRequested<br>(Event ID = xy," New Peer Reflexive<br>Candidate ")<br><br>If TCP connection establishment<br>required:<br>    Establish TCP connection<br><br>If indication on TCP connection<br>establishment failure requested:<br>    NotificationRequested<br>    (Event ID = x, "TCP connection<br>    establishment failure")<br><br>If (D)TLS session establishment<br>required:<br>    Establish (D)TLS session<br><br>If indication on (D)TLS session<br>establishment failure requested: | Local Descriptor {<br>If media is "audio" or "video":<br>  Codec List<br>  RTP Payloads<br>If media is "video":<br>  If CVO required:<br>    Extended Header for CVO<br>    (NOTE 3)<br>If media is "video":<br>  If imageattr negotiation:<br>    Generic Image Attribute<br>    (NOTE 4)<br>If media is "video":<br>  If Predefined ROI required:<br>    Extended Header For Sent ROI<br>    If termination towards ROI-<br>sending client:<br>      RTCP feedback for Predefined<br>ROI Sent<br>    If Arbitrary ROI required:<br>      Extended Header For Sent ROI<br>    If termination towards ROI-<br>sending client:<br>      RTCP feedback for Arbitrary<br>ROI Sent<br><br>If media is "message":<br>  If IMS media plane security<br>    required:<br>      Transport = TCP/TLS/MSRP<br>    Else<br>      Transport = TCP/MSRP<br>If media is "application":<br>  If CLUE data channel required:<br>    Transport = UDP/DTLS/SCTP<br>    Certificate fingerprint = $<br>    SCTP Stream ID<br>    Subprotocol = CLUE<br>    Max message size = $<br>If ICE is applied:<br>  ICE host candidate request<br>  ICE password request<br>  ICE Ufrag request<br><br>If SDPCapNeg is signalled to the<br>gateway:<br>  SDPCapNeg configuration<br><br>  }<br><br>Remote Descriptor {<br>If media is "audio" or "video":<br>  Codec List<br>  RTP Payloads<br>  If rate adaptation for media<br>    endpoints:<br>    Additional Bandwidth Properties<br>    (NOTE 7)<br>If media is "video":<br>  If CVO required:<br>    Extended Header for CVO<br>    (NOTE 3)<br>If media is "video":<br>  If imageattr negotiation:<br>    Generic Image Attribute<br>    (NOTE 4)<br>If media is "video":<br>  If Predefined ROI required: |

| | | NotificationRequested<br>(Event ID = x, "(D)TLS<br>session establishment failure")<br><br>If IMS media plane security required:<br>Pre-Shared Key (NOTE 6)<br><br>If indication on CLUE message<br>received requested:<br>NotificationRequested<br>(Event ID = x, "CLUE<br>message received") | Extended Header For Sent<br>ROI<br>If termination towards ROI-<br>receiving client:<br>RTCP feedback for<br>Predefined ROI Received<br>If Arbitrary ROI required:<br>Extended Header For Sent<br>ROI<br>If termination towards ROI-<br>receiving client:<br>RTCP feedback for Arbitrary<br>ROI Received<br><br>If media is "message":<br>If IMS media plane security<br>required:<br>Transport = TCP/TLS/MSRP<br>Else<br>Transport = TCP/MSRP<br>If media is "application":<br>If CLUE data channel required:<br>Transport = UDP/DTLS/SCTP<br>Certificate fingerprint<br>Max message size<br><br>If RTCP APP messages allowed<br>Allowed RTCP APP message<br>types<br><br>If ICE is applied:<br>ICE received candidate<br>ICE received password<br>ICE received Ufrag<br>(NOTE 5)<br><br>If SDPCapNeg is signalled to the<br>gateway:<br>SDPCapNeg configuration<br>} |
| NOTE1: | It is highly recommended to request termination heartbeat notification to detect hanging context and termination in the MRFP that may result e.g. from a loss of communication between the MRFC and the MRFP. | | |
| NOTE 2: | This shall be set to a value other than "inactive". | | |
| NOTE 3: | If the MRFP supports the extended RTP header it shall pass any received extended RTP header with CVO bits on to succeeding RTP streams. If the MRFP transcodes between video payloads and it supports the extended RTP header with CVO bits it shall keep the video orientation unchanged during the transcoding and convey received RTP CVO header bytes on the succeeding RTP streams after transcoding associated packets as specified in 3GPP TS 26.114 [41], subclause 7.4.5. | | |
| NOTE 4: | The support of the generic image attributes is optional for the MRFP. The list of image sizes per payload type supported by the MRFP is preconfigured in the MRFC. If none of the image sizes received within an SDP body on Mr interface is supported by the MRFP then the MRFC will not send the generic image attribute parameter to the MRFP. | | |
| NOTE 5: | The support of ICE received candidate, ICE received password, ICE received Ufrag are optional for ICE lite, as specified in 3GPP TS 23.333 [25]. | | |
| NOTE 6: | The MRFC and the MRFP may support IMS media plane security i.e. end-to-end media security for session-based messaging (MSRP) using the pre-shared key (PSK) ciphersuites for TLS (specified in IETF RFC 4279 [58] and profiled as specified in Annex E of 3GPP TS 33.310 [59]). The list of PSK ciphersuites for TLS supported by the MRFP is preconfigured in the MRFC. | | |
| NOTE 7: | The support of rate adaptation for media endpoints using the additional bandwidth properties is optional for the MRFP. If media transcoding is required the MRFC may provide for the selected payload type and the used IP version the additional bandwidth properties. | | |

The MRFP responds as in Table 5.17.2.4.2.

**Table 5.17.2.4.2: Reserve and Configure IMS Resources Request Acknowledge**

| Address Information | Control information | Bearer information |
|---------------------|---------------------|--------------------|

| Local Descriptor {<br>    Port<br>    IP Address<br>If media is "message":<br>    MSRP session identity<br>If media is "application":<br>  If CLUE data channel required:<br>    SCTP Port<br> }<br>Remote Descriptor {<br>    Port<br>    IP Address<br>If media is "message":<br>    MSRP session identity<br>  } | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>Stream Number | Local Descriptor {<br>If media is "audio" or "video":<br>    Codec List<br>    RTP Payloads<br>If media is "video":<br>  If CVO extension header<br>  provided in the request:<br>    Extended Header for CVO<br>If media is "video":<br>  If imageattr negotiation:<br>    Generic Image Attribute<br>If media is "video":<br>  If Predefined ROI provided in the request:<br>    Extended Header For Sent ROI<br>    If termination towards ROI-sending client:<br>      RTCP feedback for Predefined ROI Sent<br>  If Arbitrary ROI provided in the request:<br>    Extended Header For Sent ROI<br>    If termination towards ROI-sending client:<br>      RTCP feedback for Arbitrary ROI Sent<br><br>If media is "message":<br>  If IMS media plane security required:<br>      Transport = TCP/TLS/MSRP<br>    Else<br>      Transport = TCP/MSRP<br>If media is "application":<br>  If CLUE data channel required:<br>    Transport = UDP/DTLS/SCTP<br>    Certificate fingerprint<br>    SCTP Stream ID<br>    Subprotocol = CLUE<br>    Max message size<br><br>If ICE is applied:<br>    ICE host candidate<br>    ICE password<br>    ICE Ufrag<br>    If ICE lite implementation<br>      ICE lite indication<br><br>If SDPCapNeg is signalled to the gateway:<br>    SDPCapNeg configuration<br>  }<br><br>Remote Descriptor {<br>If media is "audio" or "video":<br>    Codec List<br>    RTP Payloads<br>    If rate adaptation for media endpoints:<br>      Additional Bandwidth Properties<br>If media is "video":<br>  If CVO extension header<br>  provided in the request:<br>    Extended Header for CVO<br>If media is "video":<br>  If imageattr negotiation:<br>    Generic Image Attribute<br>If media is "video": |

| | | If Predefined ROI provided in the request: |
| | | Extended Header For Sent ROI |
| | | If termination towards ROI-receiving client: |
| | | RTCP feedback for Predefined ROI Received |
| | | If Arbitrary ROI provided in the request: |
| | | Extended Header For Sent ROI |
| | | If termination towards ROI-receiving client: |
| | | RTCP feedback for Arbitrary ROI Received |
| | | |
| | | If media is "message": |
| | | If IMS media plane security required: |
| | | Transport = TCP/TLS/MSRP |
| | | Else |
| | | Transport = TCP/MSRP |
| | | If media is "application": |
| | | If CLUE data channel required: |
| | | Transport = UDP/DTLS/SCTP |
| | | |
| | | If SDPCapNeg is signalled to the gateway: |
| | | SDPCapNeg configuration |
| | | } |

### 5.17.2.5 Release IMS Termination

The MRFC sends a SUBTRACT command as in Table 5.17.2.5.1.

**Table 5.17.2.5.1: Release IMS Termination Request**

| Address Information | Control information | Bearer information |
|---------------------|---------------------|--------------------|
| | Transaction ID = x<br>Context ID= C1<br>Termination ID = T1 | |

On releasing the IMS termination, the MRFP responds as in Table 5.17.2.5.2

**Table 5.17.2.5.2: Release IMS Termination Request Acknowledge**

| Address Information | Control information | Bearer information |
|---------------------|---------------------|--------------------|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

### 5.17.2.6 Send Tone

This procedure is used to play a tone.

The MRFC sends an ADD or MODIFY command as in table 5.17.2.6.1.

**Table 5.17.2.6.1: Send Tone**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>If context already exists:<br>  Context ID = C1<br>Else<br>  Context = $<br>If Termination exists:<br>  Termination ID = T1<br>Else<br>  Termination ID = $<br><br>If Stream Number specified:<br>  Stream Number<br><br>Signal ID = Tone Identity<br>If override Signal Direction<br>  Direction = Signal Direction<br><br>If DTMF override<br>  Override = DTMFTrigger<br><br>If MRFC wishes to override the<br>default tone duration:<br>  Tone Duration<br><br>If MRFC requires to be informed<br>of the end of the tone :-<br>  Request End Of Signal<br>  Notification<br>If detection of hanging termination<br>   is requested: (NOTE3)<br>NotificationRequested (Event ID =<br>   x, "termination heartbeat") | |
| NOTE1:   Signal Direction shall be either "internal" or "external".<br>NOTE2:   Only the Tone Signal Ids shall be used, not the Tone Ids within the PlayTone Signal Id.<br>NOTE3:   The termination heartbeat event shall be configured when requesting a new bearer<br>           termination. | | |

The MRFP responds as shown in Table 5.17.2.6.2.

**Table 5.17.2.6.2: SendTone Acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>If local resources were provided in<br>request:<br>  Stream Number | |

### 5.17.2.7    Stop Tone

This procedure is used to stop a tone. This procedure is the same as the procedure Start Tone however the signal descriptor shall not include the started tone signal.  Note that a tone may also be stopped by releasing the IMS termination.

### 5.17.2.8 Tone Completed

This procedure is used to report that a tone has ended.

The MRFP sends a NOTIFY to the MRFC as shown in table 5.17.2.q.1.

**Table 5.17.2.8.1: Tone Completed**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>End Of Signal Notification = Tone Completed<br>Cause | |

The MRFC responds as shown in Table 5.17.2.8.2.

**Table 5.17.2.8.2: Tone Completed Ack**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

### 5.17.2.9 Start Announcement

This procedure is used to play an announcement, which may be fixed or variable.

The MRFC sends an ADD or MODIFY command as in Table 5.17.2.9.1.

**Table 5.17.2.9.1: Start Announcement**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>If context already exists:<br>    Context ID = C1<br>Else<br>    Context = $<br>If Termination exists:<br>    Termination ID = T1<br>Else<br>    Termination ID = $<br><br>If Stream number specified:<br>    Stream Number<br><br>Announcement Identity<br>If override Signal Direction<br>    Direction = Announcement<br>Direction<br><br>If DTMF override<br>    Override = DTMFTrigger<br><br>If MRFC wishes to override the<br>default number of cycles:<br>    Announcement Cycles<br><br>If MRFC wishes to override the<br>default announcement variant:<br>    Announcement Variant<br><br>If MRFC requires to be informed<br>of the end of the fixed<br>announcement :-<br>    Request End Of Signal<br>    Notification<br><br>If detection of hanging termination<br>    is requested: (NOTE4)<br>NotificationRequested (Event ID =<br>    x, "termination heartbeat") | |
| NOTE1:    Signal Direction shall be either "internal" or "external".<br>NOTE2:    Stream mode may be maintained as for the ongoing call or may be restricted to "send only".<br>NOTE3:    Signal Lists shall be supported.<br>NOTE4:    The termination heartbeat event shall be configured when requesting a new bearer<br>                termination. | | |

The MRFP responds as shown in Table 5.17.2.9.2.

**Table 5.17.2.9.2: Start Announcement Acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>If local resources were provided in<br>request:<br>    Stream Number | |

## 5.17.2.10    Stop Announcement

This procedure is used to stop an announcement. This procedure is the same as the procedure Start Announcement however the signal descriptor shall not include the started announcement signal.  Note that an announcement may also be stopped by releasing the IMS termination.

## 5.17.2.11    Announcement Completed

This procedure is used to report that an announcement has ended.

The MRFP sends a NOTIFY to the MRFC as shown in table 5.17.2.11.1.

**Table 5.17.2.11.1: Announcement Completed**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>End Of Signal Notification =<br>Announcement Completed<br>Cause = Announcement Cause | |

The MRFC responds as shown in Table 5.17.2.11.2.

**Table 5.17.2.11.2: Announcement Completed Ack**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

## 5.17.2.12    Start TTS

This procedure is used to play out a text file as speech.

The MRFC sends an ADD or MODIFY command as in Table 5.17.2.12.1.

**Table 5.17.2.12.1: Start TTS request**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>If context already exists:<br>  Context ID = C1<br>Else<br>  Context = $<br>If Termination exists:<br>  Termination ID = T1<br>Else<br>  Termination ID = $<br><br>If Stream number specified:<br>  Stream Number<br>If override  Direction<br>TTS Direction = Signal Direction<br><br>If DTMF override<br>  DTMF Stop TTS =DTMFTrigger<br><br>Text Block = SSML<br><br>If MRFC wishes to override the<br>default number of cycles:<br>  number of cycles = Iterations<br><br>If MRFC requires to be informed<br>of the end of TTS:-<br>  Request End Of Signal<br>  Notification<br><br><br>If detection of hanging termination<br>   is requested: (NOTE1)<br>NotificationRequested (Event ID =<br>x, "termination heartbeat") | |
| NOTE1:   The termination heartbeat event shall be configured when requesting a new bearer<br>        termination. | | |

The MRFP responds as shown in Table 5.17.2.12.2.

**Table 5.17.2.12.2:  Start TTS Acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>If local resources were provided in<br>request:<br>  Stream Number | |

## 5.17.2.13    Stop TTS

This procedure is used to stop TTS play. This procedure is the same as the procedure Start TTS however the signal descriptor shall not include the started TTS signal. Note that an TTS play may also be stopped by releasing the IMS termination.

## 5.17.2.14    TTS Completed

This procedure is used to report that an TTS play has ended.

The MRFP sends a NOTIFY to the MRFC as shown in table 5.17.2.14.1.

**Table 5.17.2.14.1: TTS Completed**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>End Of Signal Notification = TTS Completed<br>Cause | |

The MRFC responds as shown in Table 5.17.2.14.2.

**Table 5.17.2.14.2: TTS Completed Ack**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

## 5.17.2.15 Start Audio Record

This procedure enables a caller to leave/record a voice message (e.g. in a voice mail application).

The MRFC sends an ADD or MODIFY command as in table 5.17.2.15.1.

**Table 5.17.2.15.1: Start Audio Record**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>If context already exists:<br>  Context ID = C1<br>Else<br>  Context = $<br>If Termination exists:<br>  Termination ID = T1<br>Else<br>  Termination ID = $<br><br>If Stream Number specified:<br>  Stream Number<br><br>If specific record file<br>Recording File Identity = Record<br>   File Identifier<br><br>If request record file Identity<br>  Recording File Identity = ?<br><br> If maximum record time<br>  Maximum Recording Length =<br>  Maximum Record Time<br>If MRFC requires to be informed<br>   of the end of the recording :-<br>End Of Recording<br>  Notification<br><br>If override Signal Direction<br>Direction = Signal Direction<br><br>If detection of hanging termination<br>   is requested: (NOTE1)<br>NotificationRequested (Event ID =<br>  x, "termination heartbeat") | |
| NOTE1: The termination heartbeat event shall be configured when requesting a new bearer termination. ||| 
| NOTE2: Signal Direction shall be either "internal" or "external". ||| 
| NOTE3: Multiple signals shall be supported. ||| 

The MRFP responds as shown in table 5.17.2.15.2.

**Table 5.17.2.15.2: Start Audio Record acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>If local resources were provided in request:<br>  Stream Number<br>If requested record file identity<br>  Recording File Identity = Record<br>File Identifier | |

### 5.17.2.16 Stop Audio Record

This procedure is used to stop recording of audio. Note that Audio Record may also be stopped by releasing the IMS termination.

**Table 5.17.2.16.1: Stop Audio Record**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>Stop Audio Record Indication<br><br>If End of Audio Record<br>Notification previously requested :<br>  Stop End of Record<br>    Notification | |

The MRFP responds as shown in Table 5.17.2.16.2.

**Table 5.17.2.16.2: Stop Audio Record Response**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

### 5.17.2.17 Audio Record Complete

This procedure enables the MRFP to inform the MRFC when an audio recording is complete.

The MRFP sends a NOTIFY command as in table 5.17.2.17.1.

**Table 5.17.2.17.1: Audio Record Complete**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>End Of Recording Notification | |

The MRFC responds as shown in table 5.17.2.17.2.

**Table 5.17.2.17.2: Audio Record Complete Acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

### 5.17.2.18 Detect DTMF

This procedure is used to collect DTMF digits.

The MRFP applies the procedures defined in RFC 4733 [22] to receive DTMF digits at the user plane, however only complete single digits shall be reported, i.e. the MRFP shall wait until E-bit is set to 1 before reporting the digit to the MRFC.

The MRFC sends an ADD or MODIFY command as in Table 5.17.2.18.1.

**Table 5.17.2.18.1: Detect DTMF**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>If context already exists:<br>   Context ID = C1<br>Else<br>   Context = $<br>If Termination exists:<br>   Termination ID = T1<br>Else<br>   Termination ID = $<br><br>If Stream Number specified:<br>   Stream Number<br><br>NotificationRequested (Event ID = x, "Report_DTMF (Digit,Timing)") | |
| NOTE1:   Only "end tone detected" shall be requested by the MRFC.<br>NOTE2:   All digits shall be requested i.e. ToneId shall be wildcarded. | | |

The MRFP responds as shown in Table 5.17.2.18.2.

**Table 5.17.2.18.2: Detect DTMF  acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>If local resources were provided in request:<br>   Stream Number | |

## 5.17.2.19    Report DTMF

This procedure is used to notify the MRFC of detected DTMF digits.

The MRFP sends a NOTIFY command as in Table 5.17.2.19.1.

**Table 5.17.2.19.1: Report DTMF**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>Digit Notification = digit | |

The MRFC responds as shown in Table 5.17.2.19.2.

**Table 5.17.2.19.2: Report DTMF Digit Acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

## 5.17.2.20    Stop DTMF Detection

This procedure is used to stop DTMF digit detection.

The MRFC sends a MODIFY command as in Table 5.17.2.20.1.

**Table 5.17.2.20.1: Stop DTMF Detection**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>Stop DTMF Digit Collection | |

The MRFP responds as shown in Table 5.17.2.20.2.

**Table 5.17.2.20.2: Stop DTMF Digit Detection acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

## 5.17.2.21    ASR  Request

This procedure enables the MRFC to request the MRFP to perform automatic speech recognition; an advanced interaction with the user involving guidance announcements and collection of user input via speech and also possibly DTMF. In turn, the MRFP attempts to recognize and match the detected speech to the specified grammar file and report this to the MRFC.

The MRFC sends an ADD or MODIFY command as in table 5.17.2.21.1.

**Table 5.17.2.21.1: ASR  request**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>If context already exists:<br>    Context ID = C1<br>Else<br>    Context = $<br>If Termination exists:<br>    Termination ID = T1<br>Else<br>    Termination ID = $<br><br>If Stream Number specified:<br>    Stream Number<br><br>If recognition with grammar script<br>    ASR Grammar = SRGS<br>    grammar<br>Else recognition with grammar<br>    identifier<br>        ASR Grammar = SRGS<br>        grammar URI<br><br>If MRFC requires to be informed<br>    of the end of the ASR :-<br>NotificationRequested (Event ID<br>    = x, "Notify ASR Completion<br>    (recognition result)")<br><br>If detection of hanging termination<br>    is requested: (NOTE1)<br>NotificationRequested (Event ID =<br>    x, "termination heartbeat") | |
| NOTE1:    The termination heartbeat event shall be configured when requesting a new bearer termination. | | |

The MRFP responds as shown in table 5.17.2.21.2.

**Table 5.17.2.21.2: ASR  request acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>If local resources were provided in<br>request:<br>    Stream Number | |

### 5.17.2.22    ASR Completed

This procedure enables the MRFP to inform the MRFC of the result of an ASR request.

The MRFP sends a NOTIFY command as in table 5.17.2.22.1.

**Table 5.17.2.22.1: ASR Completed**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br><br>If ASR fails:<br>  ASR Cause<br>Else<br>  recognition result | |

The MRFP responds as shown in table 5.17.2.22.2.

**Table 5.17.2.22.2: ASR Completed acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

## 5.17.2.23    Stop ASR

This procedure is used to stop the ASR procedure.

The MRFC sends a MODIFY command as in Table 5.17.2.23.1.

**Table 5.17.2.23.1: Stop ASR**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>Stop ASR | |

The MRFP responds as shown in Table 5.17.2.23.2.

**Table 5.17.2.23.2: Stop ASR acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

## 5.17.2.24    Start Playing Multimedia

This procedure enables a caller to be connected to a playback of previously recorded multimedia segments. This procedure is similar to that of 5.17.2.9 with the difference that multiple H.248 streams will be used to reflect the multimedia content to be played out.

The MRFC sends an ADD or MODIFY command as in Table 5.17.2.24.1.

**Table 5.17.2.24.1: Start Playing Multimedia**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>If context already exists:<br>  Context ID = C1<br>Else<br>  Context = $<br>If Termination exists:<br>  Termination ID = T1<br>Else<br>  Termination ID = $<br><br>If multiple media sources<br>  Stream NumberX: Media IdentifierX<br>  Stream numberY: Media IdentifierY<br>Else<br>  Stream NumberX, Stream NumberY: Media Identifier<br><br>If override multimedia format<br>  Format = Multimedia File Format<br><br>If override Signal Direction<br>  Direction = Signal Direction<br><br>If DTMF override<br>  Multimedia Override = DTMFTrigger<br><br>If MRFC wishes to override the default number of cycles:<br>  play Cycles= iteration<br><br>If MRFC wishes to override the default announcement variant:<br>  Announcement Variant<br><br>If MRFC requires to be informed of the end of the multimedia play<br>  Request End Of Signal Notification<br><br>If detection of hanging termination is requested: (NOTE4)<br>NotificationRequested (Event ID = x, "termination heartbeat") | |
| NOTE1: Signal Direction shall be either "internal" or "external".<br>NOTE2: Stream mode may be maintained as for the ongoing call or may be changed be restricted to "send only".<br>NOTE3: Signal Lists shall be supported<br>NOTE4: The termination heartbeat event shall be configured when requesting a new bearer termination. | | |

The MRFP responds as shown in Table 5.17.2.24.2.

**Table 5.17.2.24.2: Start Playing Multimedia Acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>If local resources were provided in request:<br>    Stream Number | |

## 5.17.2.25    Stop Playing Multimedia

This procedure is used to stop an announcement. This procedure is the same as the procedure Start Playing Multimedia however the signal descriptor shall not include the started multimedia signal.  Note that playing multimedia may also be stopped by releasing the IMS termination.

## 5.17.2.26    Playing Multimedia Completed

This procedure is used to report that a playing multimedia has ended.

The MRFP sends a NOTIFY to the MRFC as shown in table 5.17.2.26.1.

**Table 5.17.2.26.1: Playing Multimedia Completed**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>End Of Signal Notification =<br>Playing Multimedia Completed<br>Cause = Announcement Cause | |

The MRFC responds as shown in Table 5.17.2.26.2.

**Table 5.17.2.26.2: Playing Multimedia Completed Ack**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

## 5.17.2.27    Start Multimedia Record

This procedure enables a caller to leave/record a multimedia message. This procedure is similar to that of Audio Record (5.17.2.15) with the difference that multiple H.248 streams will be used and both audio and video codecs are specified for each participant in the conference. Any prompting "announcements" are played out in the appropriate format by the MRFP based on the fact that multimedia codecs are specified by the MRFC in the Remote Descriptor. Similarly, the MRFP records all received media streams that are consistent with the Local Descriptor of the termination.

The MRFC sends an ADD or MODIFY command as in table 5.17.2.27.1.

**Table 5.17.2.27.1 – Start Multimedia Record**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>If context already exists:<br>  Context ID = C1<br>Else<br>  Context = $<br>If Termination exists:<br>  Termination ID = T1<br>Else<br>  Termination ID = $<br><br>If Stream Number specified:<br>  Stream Number<br><br>If specific record file<br>Recording File Identity = Record<br>    File Identifier<br><br>If override multimedia format<br>  Format  = Multimedia File<br>    Format<br><br><br> If maximum record time<br>  Maximum Recording Length =<br>    Maximum Record Time<br><br><br>If MRFC requires to be informed<br>   of the end of the recording :-<br>End Of Recording<br>Notification<br><br><br>If request record file identity<br>  Recording File Identity = ?<br><br>If DTMF override<br>  Override = DTMFTrigger<br><br><br>If detection of hanging termination<br>   is requested: (NOTE1)<br>NotificationRequested (Event ID =<br>   x, "termination heartbeat") | |
| NOTE1:   The termination heartbeat event shall be configured when requesting a new bearer<br>           termination.<br>NOTE2:   Multiple signals shall be supported. | | |

The MRFP responds as shown in table 5.17.2.27.2.

**Table 5.17.2.27.2: Start Multimedia Record acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>If local resources were provided in request:<br>   Stream Number<br><br>If requested record file identity<br>   Recording File Identity = Record File Identifier | |

## 5.17.2.28    Stop Multimedia Record

This procedure is used to stop recording of multimedia.  Note that Audio Record may also be stopped by releasing the IMS termination.

**Table 5.17.2.28.1: Stop Multimedia Record**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>Stop Multimedia Record Indication<br><br>If End of Multimedia Record Notification previously requested :<br>   Stop End of Record<br>   Notification | |

The MRFP responds as shown in Table 5.17.2.28.2.

**Table 5.17.2.28.2: Stop Multimedia Record Response**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

## 5.17.2.29    Multimedia Record Completed

This procedure enables the MRFP to inform the MRFC when multimedia recording is complete.

The MRFP sends a NOTIFY command as in table 5.17.2.29.1.

**Table 5.17.2.29.1: Multimedia Record Completed**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>End Of Recording   Notification | |

The MRFC responds as shown in table 5.17.2.29.2.

**Table 5.17.2.29.2: Multimedia Record Completed Acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

## 5.17.2.30    Adhoc Audio Conference

This includes support for N-party conferences plus the support of audio transcoding. In this case, up to N ephemeral terminations may be placed in a context and appropriate audio transcoding performed by the MRFP between any codec differences between the terminations. In terms of the media mixing, the MRFP mixes audio from terminations N-1, N-2 etc plays to termination N and so forth.

This procedure consists of the creation of the first ephemeral termination of a conference within a context using procedure "Reserve  and Configure IMS Resources" and then subsequent parties are added using procedures "Reserve IMS Resources" and "Configure IMS Resources".

## 5.17.2.31    Multi-Media Conferencing

This is similar to audio conferencing (5.17.2.y) with the difference that multiple H.248 streams will be used and both audio and video codecs are specified for each participant in the conference. The MRFP shall only transcode and mix between streams of the same media type.

## 5.17.2.32    Termination heartbeat indication

When the procedure "Termination heartbeat indication" is required the following procedure is initiated: the MRFP sends a NOT.req command with the following information.

**5.17.2.32.1  NOT.req (Termination heartbeat) MRFP to MRFC**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>Event_ID (Event ID = x, "termination heartbeat") | |

When the processing of command  is complete, the MRFC initiates the following procedure.

### 5.17.2.32.2 NOT.resp (Termination heartbeat)　MRFC to MRFP

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

The heartbeat timer shall be configured to a value much greater than the mean call holding time.

The MRFC is in charge of correcting any detected mismatch, by substracting hanging terminations or clearing hanging contexts.

## 5.17.2.33　Configure BFCP Termination

This procedure configures a termination to support Binary Floor Control Protocol.

The MRFC sends an ADD or MODIFY command as in Table 5.17.2.33.1.

**Table 5.17.2.33.1: Configure BFCP Termination MRFC to MRFP**

| Address Information | Control information | Bearer information |
|---|---|---|
| Local Descriptor {<br>  Port = $<br>  IP Address = $<br>}<br>Remote Descriptor {<br>  Port<br>  IP Address<br>} | Transaction ID = x<br>If context already exists:<br>  Context ID = C1<br>Else<br>  Context = $<br>If Termination exists:<br>  Termination ID = T1<br>Else<br>  Termination ID = $<br><br>If Stream Number Specified:<br>  Stream Number<br><br>If detection of hanging termination is requested: (NOTE 1)<br>    NotificationRequested<br>      (Event ID = x,<br>      "termination heartbeat")<br><br>If TCP connection establishment required:<br>    Establish TCP connection<br><br>If indication on TCP connection establishment failure requested:<br>    NotificationRequested<br>    (Event ID = x, "TCP connection establishment failure")<br><br>If indication on TLS session establishment failure requested:<br>    NotificationRequested<br>      (Event ID = x, "TLS session establishment failure")<br><br>If IMS media plane security required:<br>    Pre-Shared Key (NOTE 3) | Local Descriptor {<br><br>  If IMS media plane security required:<br>    Transport = TCP/TLS/BFCP<br>  Else<br>    Transport = TCP/BFCP<br><br>  User Identifier = UserID<br>Available Floors = FloorId-x, FloorID-y…(NOTE 2)<br><br>  }<br><br>Remote Descriptor {<br><br>  If IMS media plane security required:<br>    Transport = TCP/TLS/BFCP<br>  Else<br>    Transport = TCP/ BFCP<br><br>  } |
| NOTE 1:  It is highly recommended to request termination heartbeat notification to detect hanging context and termination in the MRFP that may result e.g. from a loss of communication between the MRFC and the MRFP.<br>NOTE 2:  Properties are configured against the local stream descriptor for BFCP but infact applies to the whole termination (user), i.e. all streams.<br>NOTE 3:  The MRFC and the MRFP may support IMS media plane security i.e. end-to-end media security for conferencing (BFCP) using the pre-shared key (PSK) ciphersuites for TLS (specified in IETF RFC 4279 [58] and profiled as specified in Annex E of 3GPP TS 33.310 [59]). The list of PSK ciphersuites for TLS supported by the MRFP is preconfigured in the MRFC. | | |

The MRFP responds as in Table 5.17.2.33.2.

**Table 5.17.2.33.2: Configure BFCP Termination Acknowledge MRFP to MRFC**

| Address Information | Control information | Bearer information |
|---|---|---|
| Local Descriptor {<br>    Port<br>    IP Address<br> }<br>Remote Descriptor {<br>     Port<br>    IP Address<br>  } | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>Stream Number | Local Descriptor {<br>If IMS media plane security<br>required:<br>    Transport = TCP/TLS/BFCP<br>Else<br>    Transport = TCP/ BFCP<br>}<br><br>Remote Descriptor {<br>If IMS media plane security<br>required:<br>    Transport = TCP/TLS/BFCP<br>Else<br>    Transport = TCP/ BFCP<br>} |

### 5.17.2.34    Configure Conference

This procedure configures or modifies Context properties required to support a MRFP based Floor Control Server.

The MRFC sends an ADD or MODIFY command as in Table 5.17.2.34.1.

**Table 5.17.2.34.1: Configure Conference MRFC to MRFP**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>If context already exists:<br>    Context ID = C1<br>Else<br>    Context = $<br><br>ContextAttribute Descriptor<br>{<br>Conference Identifier = ConfID<br><br>Floor Control Algorithm =<br>    FloorControlAlgorithm<br><br>MaxNumber of Floor Holders =<br>    MaxFloorHolder<br><br>Floor Resource Associations =<br>    FloorResAssociations<br>} | |

The MRFP responds as in Table 5.17.2.34.2.

**Table 5.17.2.34.2: Configure Conference Acknowledge MRFP to MRFC**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Context ID = C1 | |

### 5.17.2.35    Designate Floor Chair

This procedure configures a termination to be Floor Chair support Binary Floor Control Protocol.

Pre-requisites:

- This procedure is dependent on "Configure Conference" procedure having been successfully completed or it may be combined in the same ADD command.

- This procedure is dependent on "Configure BFCP Termination" procedure having been successfully completed or it may be combined in the same command.

The MRFC sends an ADD or MODIFY command as in Table 5.17.2.35.1.

**Table 5.17.2.35.1: Designate Floor Chair MRFC to MRFP**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br><br>Context ID = C1<br><br>If Termination exists:<br>   Termination ID = T1<br>Else<br>   Termination ID = $<br><br>If Stream Number Specified:<br>   Stream Number<br><br>Floors Controlled by Chair =<br>    ControlledByChair<br><br>If detection of hanging termination is<br>    requested: (NOTE1)<br>NotificationRequested (Event ID = x,<br>"termination heartbeat") | |
| NOTE1:   It is highly recommended to request termination heartbeat notification to detect hanging context and termination in the MRFP that may result e.g. from a loss of communication between the MRFC and the MRFP. | | |

The MRFP responds as in Table 5.17.2.35.2.

**Table 5.17.2.35.2: Designate Floor Chair Acknowledge MRFP to MRFC**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>Stream Number | |

### 5.17.2.36 Floor Request Decision

This procedure requests the MRFP to notify the MRFC when a decision has been made by the FCS in response to a BFCP Floor Request.

The MRFC sends an ADD or MODIFY command as in Table 5.17.2.yx.1.

**Table 5.17.2.36.1: Floor Request Decision MRFC to MRFP**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>NotificationRequested (Event ID = x,<br>"FloorRequestDecision" ) | |

The MRFP responds as in Table 5.17.2.36.2.

**Table 5.17.2.36.2: Floor Request Decsion Acknowledge MRFP to MRFC**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

### 5.17.2.37 Report Floor Request Decision

This procedure indicates the decision made by the FCS in response to a BFCP Floor Request. The MRFP indicates the agreed Floor Permissions so that any required changes to the streams can be managed by the MRFC.

The MGW sends a NOT.req command with the following information.

**Table 5.17.2.37.1: NOT.req (FloorRequestDecision) MRFP to MRFC**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = z<br>Context ID = c1<br>Termination ID = bearer1<br><br>Event_ID (Event ID = x, "<br>FloorRequestDecision (<br>Floor ID1 + FloorStatus1, Floor ID2<br>+ FloorStatus2) " | |

When the processing of command (1) is complete, the MGC initiates the following procedure.

**Table 5.17.2.37.2: NOT.resp (FloorRequestDecision) MRFC to MRFP**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = z<br>Context ID = c1<br>Termination ID = bearer1 | |

### 5.17.2.38 Modify Media

This procedure modifies the termination(s) in accordance with the agreed Floor Permissions granted by the FCS in response to a BFCP Floor Request (notified to the MRFC via the "Report Floor Request Decision" procedure).

The MRFC sends a MODIFY command as in Table 5.17.2.38.1.

**Table 5.17.2.38.1: Modify Media MRFC to MRFP**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID | Local Descriptor {<br>  If stream modified<br>    Stream Mode = mode.<br>  If attributes modified<br>    [SDP…]<br>  }<br><br>Remote Descriptor {<br>    If stream modified<br>      Stream Mode = mode.<br>    If attributes modified<br>      [SDP…]<br><br>  } |

The MRFP responds as in Table 5.17.2.38.2.

**Table 5.17.2.38.2: Modify Media Acknowledge MRFP to MRFC**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>Stream Number | |

## 5.17.2.39    Confirm Media Update

This procedure indicates to the MRFP when the media modification for a given Floor Request (notified to the MRFC via the "Report Floor Request Decision" procedure) has been performed.

The MRFC sends a MODIFY command as in Table 5.17.2.39.1.

**Table 5.17.2.39.1: Confirm Media Update MRFC to MRFP**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID<br>If Stream Number Specified:<br>    Stream Number<br><br>Floor Request Status = FloorStatus<br>Result = FloorRequestResult | |

The MRFP responds as in Table 5.17.2.39.2.

**Table 5.17.2.39.2: Confirm Media Update Acknowledge MRFP to MRFC**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>Stream Number | |

## 5.17.2.40    Start Playing Message

This procedure enables a caller to be connected to a playback of previously recorded message segments. This procedure is similar to that of 5.17.2.24 with the difference that message streams will be used to reflect the message content to be played out.

The MRFC sends an ADD or MODIFY command as in Table 5.17.2.40.1.

**Table 5.17.2.40.1: Start Playing Message**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>If context already exists:<br>  Context ID = C1<br>Else<br>  Context = $<br>If Termination exists:<br>  Termination ID = T1<br>Else<br>  Termination ID = $<br><br>If Stream Number specified:<br>  Stream Number<br><br>Message identifier =<br>MessageIdentifier<br><br>If override Signal Direction<br>  Direction = Signal Direction<br><br>If MRFC requires to be informed<br>of the end of the message play:<br>Result of message play =<br>MessagePlayResultReport<br><br>If detection of hanging termination<br>   is requested: (NOTE4)<br>NotificationRequested (Event ID =<br>x, "termination heartbeat") | |
| NOTE1: Signal Direction shall be either "internal" or "external".<br>NOTE2: Stream mode may be maintained as for the ongoing call or may be changed be restricted to "send only".<br>NOTE3: Signal Lists shall be supported<br>NOTE4: The termination heartbeat event shall be configured when requesting a new bearer termination. | | |

The MRFP responds as shown in Table 5.17.2.40.2.

**Table 5.17.2.40.2: Start Playing Message Acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>If local resources were provided in request:<br>  Stream Number | |

### 5.17.2.41 Stop Playing Message

This procedure is used to stop an announcement. This procedure is the same as the procedure Start Playing Message however the signal descriptor shall not include the started message signal. Note that playing message may also be stopped by releasing the IMS termination.

### 5.17.2.42 Playing Message Completed

This procedure is used to report that a playing message has ended.

The MRFP sends a NOTIFY to the MRFC as shown in table 5.17.2.aa+3.1.

**Table 5.17.2.42.1: Playing Message Completed**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>End Of Signal Notification =<br>Playing Message Completed<br>Cause = MessagePlayCause | |

The MRFC responds as shown in Table 5.17.2.42.2.

**Table 5.17.2.42.2: Playing Message Completed Ack**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

## 5.17.2.43    Start Message Record

This procedure enables a caller to leave/record a messaging message. This procedure is similar to that of Multimedia Record (5.17.2.27) with the difference that messaging H.248 stream will be used. Similarly, the MRFP records all received media streams that are consistent with the Local Descriptor of the termination.

The MRFC sends an ADD or MODIFY command as in table 5.17.2.43.1.

**Table 5.17.2.43.1 – Start Message Record**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>If context already exists:<br>   Context ID = C1<br>Else<br>   Context = $<br>If Termination exists:<br>   Termination ID = T1<br>Else<br>   Termination ID = $<br><br>If Stream Number specified:<br>   Stream Number<br><br>If specific record file<br>Recording File Identity =<br>     MessageRecordFileIdentifier<br>Else<br>Recording File Identity =  ?<br><br><br> If maximum record time<br>   Maximum Recording Length =<br>     Maximum Record Time<br><br>If override Signal Direction<br>Direction = Signal Direction<br><br><br>If MRFC requires to be informed<br>   of the end of the recording :-<br>   End Of Recording Notification | |

The MRFP responds as shown in table 5.17.2.43.2.

**Table 5.17.2.43.2: Start Message Record acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x <br> Context ID = C1 <br> Termination ID = T1 <br> If local resources were provided in request: <br>     Stream Number <br><br> If requested record file identity <br>   Recording File Identity = MessageRecordFileIdentifier | |

## 5.17.2.44    Stop Message Record

This procedure is used to stop recording of message.  Note that Message Record may also be stopped by releasing the IMS termination.

**Table 5.17.2.44.1: Stop Message Record**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x <br> Context ID = C1 <br> Termination ID = T1 <br><br> Stop Multimedia Record Indication <br><br> If End of Multimedia Record Notification previously requested: <br>     Stop End of Record  Notification | |

The MRFP responds as shown in Table 5.17.2.44.2.

**Table 5.17.2.44.2: Stop Message Record Response**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x <br> Context ID = C1 <br> Termination ID = T1 | |

## 5.17.2.45    Message Record Completed

This procedure enables the MRFP to inform the MRFC when message recording is complete.

The MRFP sends a NOTIFY command as in table 5.17.2.bb+3.1.

**Table 5.17.2.45.1: Message Record Completed**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>End Of Recording  Notification | |

The MRFC responds as shown in table 5.17.2.45.2.

**Table 5.17.2.45.2: Message Record Completed Acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

## 5.17.2.46    Configure Granted Quota

This procedure configures a termination of the granted quota to support message statistics.

The MRFC sends an ADD or MODIFY command as in Table 5.17.2.46.1.

**Table 5.17.2.46.1: Configure Granted Quota MRFC to MRFP**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>If context already exists:<br>  Context ID = C1<br>Else<br>  Context = $<br>If Termination exists:<br>  Termination ID = T1<br>Else<br>  Termination ID = $<br><br>If Stream Number Specified:<br>  Stream Number<br><br>If report of message statistics on<br>    quota is requested:<br>NotificationRequested (Event ID = x,<br>    "Messaging Quota" (<br>If Quota for number of messages<br>sent specified:<br>Number of Messages Sent Quota =<br>MessagesSentNumQuota<br><br>If Quota for number of messages<br>received specified:<br>Number of Messages received<br>Quota =<br>MessagesreceivedNumQuota<br><br>If Quota for volume of messages<br>sent specified:<br>Volume of Messages Sent Quota =<br>MessagesSentVolQuota<br><br>If Quota for volume of messages<br>received specified:<br>Volume of Messages Received<br>Quota =<br>MessagesReceivedVolQuota<br><br>If Valid Time specified:<br>Valid Time =<br>StatValTime<br>)) | |

The MRFP responds as in Table 5.17.2.46.2.

**Table 5.17.2.46.2: Configure Granted Quota Acknowledge MRFP to MRFC**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>Stream Number | |

### 5.17.2.47 Report Message Statistics

This procedure is used to notify the MRFC of message statistics.

The MRFP sends a NOTIFY command as in Table 5.17.2.47.1.

**Table 5.17.2.47.1: Report Message Statistics**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>Reason For Report =<br>StatRepReason<br><br>If  number of messages sent<br>requested:<br>Number of Messages Sent =<br>MessagesSentNum<br><br>If number of messages received<br>requested:<br>Number of Messages received =<br>MessagesreceivedNum<br><br>If volume of messages sent<br>requested:<br>Volume of Messages Sent =<br>MessagesSentVol<br><br>If volume of messages received<br>requested:<br>Volume of Messages Received  =<br>MessagesReceivedVol | |

The MRFC responds as shown in Table 5.17.2.47.2.

**Table 5.17.2.47.2: Report Message Statistics Acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

### 5.17.2.48    Configure Filtering Rules

This procedure configures a termination of the filtering rules to support message filtering.

The MRFC sends an ADD or MODIFY command as in Table 5.17.2.48.1.

**Table 5.17.2.48.1: Configure Filtering Rules MRFC to MRFP**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>If context already exists:<br>   Context ID = C1<br>Else<br>   Context = $<br>If Termination exists:<br>   Termination ID = T1<br>Else<br>   Termination ID = $<br><br>If Stream Number Specified:<br>   Stream Number<br><br>If requested message filtering on<br>    incoming messages:<br>Incoming Message Filters =<br>    IncMessageFilters (NOTE)<br><br>If requested message filtering on<br>   outgoing messages:<br>Outgoing Message Filters =<br>    OutMessageFilters (NOTE) | |
| NOTE: | The value shall comply with Sieve [IETF RFC5228] with the exceptions described in H.248.69 [35] Clause 13.6. Filtering rules and Message treatment for Filtered message are included in the parameter. The filtering rules include Sender address, Message size, Message content type, Message content format and Message subject, and the filtering rules can be applied in different combination. The Message treatment for Filtered message include Block the delivery of the message, Store the message content and Redirect the message to another address. If the message treatment is "Store the message content" the Store URL should be specified, if the message treatment is "Redirect the message" the Redirect URL should be specified. | |

The MRFP responds as in Table 5.17.2.48.2.

**Table 5.17.2.48.2: Configure Filtering Rules Acknowledge MRFP to MRFC**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br>Stream Number | |

## 5.17.2.49 ECN Failure Indication

The MRFP sends a NOTIFY request command as in Table 5.17.2.49.1.

**Table 5.17.2.49.1: ECN Failure Indication**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= C1<br>Termination ID = T1<br><br>Event_ID (Event ID = x,<br>" ECN Failure (ECN Failure Type)") | |

The MRFC responds as in Table 5.17.2.49.2

**Table 5.17.2.49.2: ECN Failure Indication Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = <u>C1</u><br>Termination ID = T1 | |

### 5.17.2.50    ICE Connectivity Check Result Notification

The MRFP sends a NOTIFY request command as defined in Table 5.17.2.50.1.

**Table 5.17.2.50.1: ICE Connectivity Check Result Notification**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= C1<br>Termination ID = T1<br><br>Event_ID (Event ID = x,<br>" Connectivity Check Result<br>    (Candidate/Transport Pair)") | |

The MRFC responds as defined in Table 5.17.2.50.2

**Table 5.17.2.50.2: ICE Connectivity Check Result Notification Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

### 5.17.2.51    ICE New Peer Reflexive Candidate Notification

The MRFP sends a NOTIFY request command as defined in Table 5.17.2.51.1.

**Table 5.17.2.51.1: ICE New Peer Reflexive Candidate Notification**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= C1<br>Termination ID = T1<br><br>Event_ID (Event ID = x,<br>" New Peer Reflexive Candidate<br>    (Candidate)") | |

The MRFC responds as defined in Table 5.17.2.51.2

**Table 5.17.2.51.2: ICE New Peer Reflexive Candidate Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

### 5.17.2.52    Notify TCP connection establishment Failure Indication

If the MRFC has requested reporting of TCP connection establishment failures the MRFP sends a NOTIFY request command as defined in table 5.17.2.52.1 when a TCP connection establishment failure occurs.

**Table 5.17.2.52.1: Notify TCP connection establishment Failure Indication**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>Event_ID (Event ID = y,<br>  "TCP connection establishment Error Indication") | |

The MRFC responds as defined in table 5.17.2.52.2.

**Table 5.17.2.52.2: Notify TCP connection establishment Failure Indication Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

### 5.17.2.53 Notify TLS session establishment Failure Indication

If the MRFC has requested reporting of TLS session establishment failures the MRFP sends a NOTIFY request command as defined in table 5.17.2.53.1 when an unsuccessful TLS session set-up occurs.

**Table 5.17.2.53.1: Notify TLS session establishment Failure Indication**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>Event_ID (Event ID = y,<br>  "(TLS session establishment Error Indication") | |

The MRFC responds as defined in table 5.17.2.53.2.

**Table 5.17.2.53.2: Notify TLS session establishment Failure Indication Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

### 5.17.2.54 CLUE Message Send

This procedure is used in a telepresence session by the MRFC to request the MRFP to send a CLUE message.

The MRFC sends a MODIFY command as in table 5.17.2.54.1.

**Table 5.17.2.54.1: CLUE Message Send**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= C1<br>Termination ID = T1<br><br>CLUE Message Send (enhanced<br>protocol=CLUE,label, message<br>content) | |

The MRFP responds as shown in table 5.17.2.54.2.

**Table 5.17.2.54.2: CLUE Message Send acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= C1<br>Termination ID = T1 | |

## 5.17.2.55    CLUE Message Received

This procedure enables the MRFP to inform the MRFC when a CLUE message received.

The MRFP sends a NOTIFY command as in table 5.17.2.55.1.

**Table 5.17.2.55.1: CLUE Message Received**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1<br><br>Detect bearer level message<br>(protocol= CLUE, message<br>content) | |

The MRFC responds as shown in table 5.17.2.55.2.

**Table 5.17.2.55.2: CLUE Message Received Acknowledge**

| Address information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = C1<br>Termination ID = T1 | |

## 5.17.3    Non-Call Related Procedures

### 5.17.3.1    General

This section describes the various non-call related procedures which are listed in table 5.17.3.1.1

**Table 5.17.3.1.1: MRFP Non-Call Related Procedures**

| Transaction defined in 3GPP TS 23.333 [25] | Support | Comment |
|---|---|---|
| MRFP Out of service | Mandatory | 5.17.3.2 |
| MRFP Communication Up | Mandatory | 5.17.3.3 |
| MRFP Register | Mandatory | 5.17.3.4 |
| MRFP Re-register | Mandatory | 5.17.3.5 |
| MRFC Ordered Re-register | Mandatory | 5.17.3.6 |
| MRFC Restoration | Optional | 5.17.3.7 |
| MRFC Out of Service | Optional | 5.17.3.8 |
| Audit Value | Mandatory | 5.17.3.9 |
| Audit Capability | Optional | 5.17.3.10 |
| Capability Update | Optional | 5.17.3.11 |
| MRFP Resource Congestion Handling – Activate | Mandatory | 5.17.3.12 |
| MRFP Resource Congestion Handling – Indication | Mandatory | 5.17.3.13 |
| Command Rejected | Mandatory | 5.17.3.14<br><br>The "Command Rejected" procedure may be used in response both to call-related and non-call-related ITU-T Recommendation H.248 Commands |
| MRFP Restoration | Mandatory | 5.17.3.15 |

## 5.17.3.2   MRFP Out Of Service

The MRFP sends a SERVICE CHANGE request command as in Table 5.17.3.2.1.

**Table 5.17.3.2.1: MRFP Out Of Service Request**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= -<br>Termination ID = ROOT<br>SC Method = FORCED or GRACEFUL<br>SC Reason = 905 Termination Taken OOS or 908, MG Impending Failure | |

The MRFC responds as in table 5.17.3.2.2.

**Table 5.17.3.2.2: MRFP Out Of Service Request Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = -<br>Termination ID = ROOT | |

## 5.17.3.3   MRFP Communication Up

The MRFP sends a SERVICE CHANGE request command as in Table 5.17.3.3.1 to the MRFC address to which the control link association was previously established.

**Table 5.17.3.3.1: MRFP Communication Up**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= -<br>Termination ID = ROOT<br>SC Method = DISCONNECTED<br>SC Reason = 900 , Service Restored | |

The MRFC may respond as in table 5.17.3.3.2. If a response is received, the control link association is re-established and the inactivity timer would be restarted.

**Table 5.17.3.3.2: MRFP Communication Up Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = -<br>Termination ID = ROOT | |

### 5.17.3.4   MRFP Register

The MRFP sends a SERVICE CHANGE request command as in Table 5.17.3.4.1.

**Table 5.17.3.4.1: MRFP Register**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= -<br>Termination ID = ROOT<br>SC Method = RESTART<br>SC Reason =901Cold Boot  or 902, Warm Boot<br>H248 Profile Identity<br>H248 Protocol Version | |

The MRFC responds as in table 5.17.3.4.2.

**Table 5.17.3.4.2: MRFP Register Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = -<br>Termination ID = ROOT<br>H248 Protocol Version<br>If applicable:-<br>  H248 Profile Identity | |

### 5.17.3.5   MRFC Restoration

When the MRFC has recovered, the MRFC sends a SERVICE CHANGE as in Table 5.17.3.5.1,

The MRFP may respond as in Table 5.17.3.5.2.

The MRFC sends a SERVICE CHANGE as in Table 5.17.3.5.1

**Table 5.17.3.5.1: MRFC Restoration**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= -<br>Termination ID = ROOT<br>SC Method = RESTART<br>SC Reason = 901, Cold Boot OR<br>    902, Warm Boot | |

The MRFP responds as in table 5.17.3.5.2.

**Table 5.17.3.5.2: MRFC Restoration Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = -<br>Termination ID = ROOT | |

### 5.17.3.6    MRFP Re-Register

The MRFP sends a SERVICE CHANGE request command as in Table 5.17.3.6.1.

**Table 5.17.3.6.1: Re-Registration**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= -<br>Termination ID = ROOT<br>SC Method = Handoff<br>SC Reason = 903, MGC Directed<br>Change<br>H248 Profile Identity<br>H248 Protocol Version | |

The MRFC responds as in table 5.17.3.6.2.

**Table 5.17.3.6.2: Re-Registration Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = -<br>Termination ID = ROOT<br>H248 Protocol Version<br>If applicable:-<br>   H248 Profile Identity | |

### 5.17.3.7    MRFC Ordered Re-register

The MRFC sends a SERVICE CHANGE request command as in Table 5.17.3.7.1.

**Table 5.17.3.7.1: MRFC Ordered Re-Register**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= -<br>Termination ID = ROOT<br>SC Method = HANDOFF<br>SC Reason = 903, MGC Directed Change | |

The MRFP responds as in table 5.17.3.7.2.

**Table 5.17.3.7.2: MRFC Ordered Re-Register Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = -<br>Termination ID = ROOT | |

The MRFP then performs an MRFP Re-Register procedure according to Clause 5.17.3.6.

## 5.17.3.8 Audit Value

The MRFC sends an AUDIT VALUE request command as in Table 5.17.3.8.1.

**Table 5.17.3.8.1: Audit Value**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= -/ALL<br>Termination ID = ROOT/ALL/T1<br>Audit Packages (NOTE1)<br>Audit Descriptor =<br>Empty/IndAuditParameter:=<br>IndAudMediaDescriptor:=<br>streams<br>{<br>  IndAudStreamParms:=<br>  {<br>    Stream Number,<br>    IndAudStreamParms:=<br>    IndAudLocalControlDescriptor:=<br>    IndAudPropertyParm:=<br>    mgcinfo<br>  }<br>}<br><br>Audit Descriptor =<br>IndAuditParameter:=<br>IndAudMediaDescriptor:=<br>IndAudTerminationStateDescriptor:=<br>SDPCapNeg Supported Capabilities<br>(NOTE 2) | |
| NOTE 1: Packages are used for Null/Root Combination.<br>NOTE 2: Used for auditing SDPCapNeg Extensions when SDPCapNeg signalling to the gateway is supported. | | |

The MRFP responds as in table 5.17.3.8.2.

**Table 5.17.3.8.2: Audit Value Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = -/Context ID<br>Termination ID = ROOT/T1<br>Packages List<br>Mgcinfo<br>SDPCapNeg Extensions | |

Upon reception of the command in the MRFP:

- The Service State returns the current Service State

- When Packages are requested, the Package Names and Versions are returned

The following table illustrates the allowed combinations that can be obtained with the AuditValue Command:

**Table 15.17.3.8.3: Combinations of AuditValue Command**

| ContextID | TerminationID | Information Obtained |
|---|---|---|
| Specific | Wildcard | Audit of matching Terminations in a Context |
| Specific | Specific | Audit of a single Termination in a Context |
| Null | Root | Audit of Media Gateway state and events |
| All | Specific | (Non-null) ContextID in which the Termination currently exists |

## 5.17.3.9    Audit Capabilities

The MRFC sends an AUDIT CAPABILITY request command as in Table 5.17.3.9.1.

**Table 5.17.3.9.1: Audit Capability Request**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= -<br>Termination ID = ROOT<br>Audited Capabilities | |

The MRFP responds as in table 5.17.3.9.2.

**Table 5.17.3.8.2.2: Audit Capability Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = -<br>Termination ID = ROOT<br>Capabilities | |

## 5.17.3.10    Capability Update

The MRFP sends a SERVICE CHANGE request command as in Table 5.17.3.10.1.

**Table 5.17.3.10.1: Capability Update**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= -<br>Termination ID = ROOT<br>SC Method = RESTART or<br>    DISCONNECTED<br>SC Reason = 916, Packages<br>    Change or  917, Capability<br>    Change | |

The MRFC responds as in table 5.17.3.10.2.

**Table 5.17.3.10.2 Capability Update Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = -<br>Termination ID = ROOT | |

### 5.17.3.11  MRFC Out of Service

The MRFC sends a SERVICE CHANGE request command as in Table 5.17.3.11.1.

**Table 5.17.3.11.1: MRFC Out Of Service**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= -<br>Termination ID = ROOT<br>SC Method = FORCED or<br>GRACEFUL<br>SC Reason = 905, Termination<br>Taken OOS | |

The MRFP responds as in table 5.17.3.11.2.

**Table 5.17.3.11.2: MRFC Out Of Service Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = -<br>Termination ID = ROOT | |

### 5.17.3.12  MRFP Resource Congestion Handling – Activate

The MRFC sends a MODIFY request command as in Table 5.17.3.12.1.

**Table 5.17.3.12.1: MRFP Resource Congestion Handling – Activate**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= -<br>Termination ID = ROOT<br>If required :<br>   Set Inactivity Timer<br>    Request Overload Notification | |

The MRFP responds as in table 5.17.3.12.2.

**Table 5.17.3.12.2: MRFP Resource Congestion Handling – Activate Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = -<br>Termination ID = ROOT | |

## 5.17.3.13    MRFP Resource Congestion Handling – Indication

The MRFP sends a NOTIFY request command as in Table 5.17.3.13.1.

**Table 5.17.3.13.1: MRFP Resource Congestion Handling – Indication**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= -<br>Termination ID = ROOT<br>Overload Notification | |

The MRFC responds as in table 5.17.3.13.2.

**Table 5.17.3.13.2: MRFP Resource Congestion Handling – Indication Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = -<br>Termination ID = ROOT | |

## 5.17.3.14    Command Rejected

When the procedure "Command Reject" is required the following procedure is initiated:

The MGW/MGC sends .resp to any command.req with the following information.

**Table 5.17.3.14.1: NYcommand.resp (command reject ) MRFP/MRFC to MRFC/MRFP**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = z<br>Context ID = c1 or no context<br><br>Reason=Error | |

## 5.17.3.15    MRFP Restoration

When the MRFP has recovered, the MRFP sends a SERVICE CHANGE as in Table 5.17.3.15.1,

The MRFC may respond as in Table 5.17.3.15.2.

The MRFP sends a SERVICE CHANGE as in Table 5.17.3.15.1

**Table 5.17.3.15.1: MRFC Restoration**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID= -<br>Termination ID = ROOT<br>SC Method = RESTART<br>SC Reason = 900, Service Restored | |

The MRFC responds as in table 5.17.3.15.2.

**Table 5.17.3.15.2: MRFC Restoration Ack**

| Address Information | Control information | Bearer information |
|---|---|---|
| | Transaction ID = x<br>Context ID = -<br>Termination ID = ROOT | |

# Annex A (normative):
# The W3C SSML Profile for TTS function

## A.1 Introduction

This annex contains a profile to the W3C Speech Synthesis Markup Language (SSML) specification [28].The SSML specification is a W3C Recommendation, and is designed to provide a rich, XML-based markup language for assisting the generation of synthetic speech in Web and other applications. The essential role of the markup language is to provide authors of synthesizable content a standard way to control aspects of speech such as pronunciation, volume, pitch, rate, etc. across different synthesis-capable platforms.

This annex provides a profile for SSML according to the stage 2 specification of the Mp interface. This profile is referenced by the advanced audio server base package for TTS enhancement.

## A.2 TTS Profile

**Table A.2.1: The profile of SSML**

| Element or attribute | Description | Support |
|---|---|---|
| **speak** | This is the root element that can contain text to be rendered and the following elements: **audio, break, emphasis, lexicon, mark, meta, metadata, p, phoneme, say-as, sub, s, voice** | Mandatory. |
| **xml:lang** | This attribute defines the language that applied to the element, subelements and its attributes. The **phoneme, emphasis, break, p,** and **s** elements are language specific dependent | Mandatory |
| **xml:base** | This attribute defines the base URI for resolving relative URI that may be used for the following elements:<br>- The optional **src** attribute of **audio** element<br>- The **uri** attribute of **lexicon** element | Optional |
| **lexicon** | An SSML document may reference one or more external pronunciation documents, the **lexicon** element is used to identified the URI of this external document.<br>A lexicon document contains pronunciation for tokens that can appear in a text to be spoken. A **lexicon** element shall contain an uri. | Mandatory |
| **meta and metadata** | The **metadata** and **meta** elements are containers in which information about the document can be placed | Optional |

| **p and s** | A **p** element represents a paragraph and **s** element represents a sentence.<br>The use of **p** and **s** elements is optional. Where text occurs without an enclosing p or s element the synthesis processor should attempt to determine the structure using language-specific knowledge of the format of plain text.<br>The **p** element can only contain text to be rendered and the following elements: **audio**, **break**, **emphasis**, **mark**, **phoneme**, **prosody**, **say-as**, **sub**, **s**, **voice**.<br>The **s** element can only contain text to be rendered and the following elements: **audio**, **break**, **emphasis**, **mark**, **phoneme**, **prosody**, **say-as**, **sub**, **voice**. | Optional |
|---|---|---|
| **say-as** | The **say-as** element allows the author to indicate information on the type of text construct contained within the element and to help specify the level of detail for rendering the contained text. For example for English when "$200" appears in a document it may be spoken as "two hundred dollars", similarly, "1/2" may be spoken as "half", "one of two"..<br>Defining a comprehensive set of text format types is difficult because of the variety of languages that have to be considered and because of the innate flexibility of written languages. SSML only specifies the **say-as** element, its attributes, and their purpose. It does not enumerate the possible values for the attributes. The Working Group expects to produce a separate document that will define standard values and associated normative behavior for these values.<br>The **say-as** element has three attributes: interpret-as, format and detail<br>The **say-as** element can only contains text to be rendered | Optional |
| **phoneme** | The phoneme element provides a phonemic/phonetic pronunciation for the contained text.<br>The **ph** attribute is a required attribute that specifies the phoneme/phone string.<br>The **alphabet** attribute is an optional attribute that specifies the phonemic/phonetic alphabet. An alphabet in this context refers to a collection of symbols to represent the sounds of one or more human languages. The only valid values for this attribute are **"ipa"** (see the next paragraph) and vendor-defined strings of the form **"x-organization"** or **"x-organization-alphabet"**.<br>Example:<br><phoneme                                          alphabet="ipa" ph="t&#x259;mei&#x325;&#x27E;ou&#x325;">        tomato </phoneme> | Optional |

| **sub** | The **sub** element is employed to indicate that the text in the alias attribute value replaces the contained text for pronunciation. The required alias attribute specifies the string to be spoken instead of the enclosed string. The sub element can only contain text (no elements).<br>Example:<br><sub alias="World Wide Web Consortium">W3C</sub> | Optional |
|---|---|---|
| **Voice** | The **voice** element indicates the characteristics of the voice rendering.<br>The **voice** element is commonly used to change the language<br>The following attributes are used:<br>  - gender: male, female or neutral<br>  - age<br>  - variant: indicates a preferred variant of the other voice characteristics<br>  - name indicates the processor-specific voice name | Optional |
| **emphasis** | The **emphasis** element requests that the contained text be spoken with emphasis (also referred to as prominence or stress).<br>the optional level attribute indicates the strength of emphasis to be applied. Defined values are "strong", "moderate", "none" and "reduced".<br>The **emphasis** element can only contain text to be rendered and the following elements: audio, break, emphasis, mark, phoneme, prosody, say-as, sub, voice. | Optional |
| **break** | The **break** element is an empty element that controls the pausing or other prosodic boundaries between words.<br>The **break** element is most often used to override the typical automatic behaviour of a synthesis processor.<br>The following attributes are used on the break element:<br>  - **strength: "none", "x-weak", "weak" "medium", "strong", or "x-strong"**. It indicates the strength of the prosodic break in the speech output. For example, the breaks between paragraphs are typically much stronger than the breaks between words within a sentence.<br>  - **Time**: the time attribute is an option attribute indicating the duration of a pause to be inserted in the output in seconds or milliseconds e.g. "250ms", "3s" | Optional |

| **prosody** | The **prosody** element permits control of the pitch, speaking rate and volume of the speech output, the optional attributes are:<br>  - **pith**: this attribute indicates the baseline pitch. legal value are: a number followed by "Hz", a relative change (+10Hz or +5st, a semitone is half of a tone on the standard diatonic scale), or a "x-low", "low", "medium", high", x-high", or "default". The exact meaning of baseline pitch may vary across synthesis processors<br>  - **pitch contour**: the pitch contour is a set of the form (time position,target), the first value is a percentage of the period of the contained text (a [number](#) followed by "%") and the second value is the value of the pitch attribute. e.g. (20%,"+10Hz) (40%, "+20Hz) means increase the pitch of 10Hz at 20% of the period of the contained text and 20Hz at 40% of the text duration.<br>  - **Range**: the pitch range although the exact meaning may vary across synthesis processor. The same value as for pitch are legal value from SSML.<br>  - **Rate**: change the speaking rate. Legal values are: a relative change or **"x-slow", "slow", "medium", "fast", "x-fast" or "default"**.<br>  - **Duration**: a value in seconds or milliseconds for the desired time to take to read the element contents.<br>  - **Volume**: the volume for the contained text in the range 0.0 to 100.0. Legal values are: a number, a relative change or **"silent", "x-soft", "soft", "medium", "loud", "x-loud", or "default".** | Optional |
|---|---|---|
| **audio** | The **audio** element supports the insertion of recorded audio files. | Optional |
| **Mark** | The **mark** element is an empty element that places a marker into the text/tag sequence that the environment will be informed to detect the corresponding position within the rendered output and may report an event when encountered. This element has a **name** attribute. | Optional |
| **Desc** | The **desc** element can only occur within the content of the audio element.<br>It describes the textual content of the audio source that may be used when text-only output is being produced by the synthesis processor. | Optional |

# Annex B (normative):
# The W3C SRGS Profile for ASR function

## B.1 Introduction

This annex contains a profile to the W3C Speech Recognition Grammar Specification (SRGS) [29]. The SGRS are intended for use by speech recognizers and other grammar processors so that developers can specify the words and patterns of words to be listened for by a speech recognizer.

This annex provides a profile for SRGS according to the stage 2 specification of the Mp interface. This profile is referenced by the ASR Package.

## B.2 SRGS Profile

**Table B.2.1: The profile of SRGS**

| Declaration Item | Description | Support or not |
|---|---|---|
| Language | The **language** declaration of a grammar provides the language identifier that indicates the primary language contained by the document and optionally indicates a country or other variation. Additionally, any legal rule expansion may be labeled with a language identifier. The language declaration is required for all speech recognition grammars. | Mandatory |
| Mode | The mode of a grammar indicates the type of input that the user agent should be detecting. The default mode is "**voice**" for speech recognition grammars. An alternative input mode is "**dtmf**" input. For the Mp interface, only voice mode is supported. | Mandatory |
| Root rule | Both the XML Form and ABNF Form permit the grammar header to optionally declare a single rule to be the root rule of the grammar. The rule declared as the root rule must be defined within the scope of the grammar. The rule declared as the root rule may be scoped as either **public** or **private**. | Mandatory |

| | | |
|---|---|---|
| Tag format | The **tag-format** declaration is an optional declaration of a tag-format identifier that indicates the content type of all rule tags and header tags contained within a grammar. The tag-format identifier is a URI. It is recommended that the tag format identifier indicate both the content type and a version. Tags typically contain content for a semantic interpretation processor and in such cases the identifier, if present, should indicate the semantic processor to use. Tag-format identifier values beginning with the string "semantics/x.y" (where x and y are digits) are reserved for use by the W3C Semantic Interpretation for Speech Recognition specification [SEM] or future versions of the specification. | Mandatory |
| Base URI | Relative URIs are resolved according to a base URI, which may come from a variety of sources. The base URI declaration allows authors to specify a document's base URI explicitly. The path information specified by the base URI declaration only affects URIs in the document where the element appears. The base URI declaration is permitted but optional in both the XML Form and the ABNF Form. | Optional |
| Pronounciation lexicon | A grammar may optionally reference one or more external pronunciation lexicon documents. A lexicon document is identified by a URI with an optional media type. The pronunciation information contained within a lexicon document is used only for tokens defined within the enclosing grammar. The W3C Voice Browser Working Group is developing the Pronunciation Lexicon Markup Language [LEX]. The specification will address the matching process between tokens and lexicon entries and the mechanism by which a speech recognizer handles multiple pronunciations from internal and grammar-specified lexicons. Pronunciation handling with proprietary lexicon formats will necessarily be specific to the speech recognizer. Pronunciation lexicons are necessarily language-specific. Pronunciation lookup in a lexicon and pronunciation inference for any token may use an algorithm that is language-specific. (See Section 2.1 for additional information on token handling and pronunciations.) | Mandatory |
| Metadata | Grammar documents let authors specify metadata — information about a document rather than document content — in a number of ways. A **meta** declaration in either the ABNF Form or XML Form may be used to express metadata information in both XML | Not Applicable |

| | | |
|---|---|---|
| | | Form and ABNF Form grammars or to reference metadata available in an external resource. The XML Form also supports a **metadata** element that provides a more general and powerful treatment of metadata information than **meta**. Since **metadata** requires an XML metadata schema which cannot be expressed in ABNF, there is no equivalent of **metadata** in the ABNF Form of grammars. | |
| Tag | A grammar may optionally specify one or more **tag** declarations in the header. The content of a **tag** in the header, just like a tag in rule expansions, is an arbitrary string which may be used for semantic interpretation. | Mandatory |

# Annex C (informative):
# Change history

| Change history | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Date** | **TSG #** | **TSG Doc.** | **CR** | **Rev** | **Subject/Comment** | **Old** | **New** |
| 06-2007 | CT#36 | CP-070336 | | | V7.0.0 approved in CT#36 | 1.0.0 | 7.0.0 |
| 09-2007 | CT#37 | CP-070539 | 0001 | 2 | Alignment of stage 3 to proposed stage 2 changes for Audio Record and Multimedia Record | 7.0.0 | 7.1.0 |
| 09-2007 | CT#37 | CP-070539 | 0002 | 1 | Completion of formats and codes | 7.0.0 | 7.1.0 |
| 09-2007 | CT#37 | CP-070539 | 0003 | 1 | Corrections to Stage 3 Profile | 7.0.0 | 7.1.0 |
| 09-2007 | CT#37 | CP-070539 | 0004 | 1 | Editorial corrections | 7.0.0 | 7.1.0 |
| 12-2007 | CT#38 | CP-070745 | 0005 | 1 | Properties returned in commands | 7.1.0 | 7.2.0 |
| 12-2007 | CT#38 | CP-070745 | 0007 | | Add the tone generator package | 7.1.0 | 7.2.0 |
| 12-2007 | CT#38 | CP-070745 | 0008 | 1 | Align parameters for configure remote IMS resources | 7.1.0 | 7.2.0 |
| 12-2007 | CT#38 | CP-070745 | 0009 | 1 | Amend iterations parameter in start TTS procedure | 7.1.0 | 7.2.0 |
| 12-2007 | CT#38 | CP-070745 | 0010 | 1 | Amendment of the ASR procedure | 7.1.0 | 7.2.0 |
| 12-2007 | CT#38 | CP-070745 | 0011 | 1 | Clean-up of hanging contexts and terminations | 7.1.0 | 7.2.0 |
| 12-2007 | CT#38 | CP-070745 | 0012 | 1 | Correct the usage information of the recording package | 7.1.0 | 7.2.0 |
| 12-2007 | CT#38 | CP-070745 | 0014 | 1 | Implementation of multiple signals played simultaneously | 7.1.0 | 7.2.0 |
| 12-2007 | CT#38 | CP-070745 | 0015 | 1 | Align the profile with stage 2 | 7.1.0 | 7.2.0 |
| 03-2008 | CT#39 | CP-080017 | 0016 | | Alignment of IMS resources procedures' title | 7.2.0 | 7.3.0 |
| 03-2008 | CT#39 | CP-080017 | 0018 | 1 | Amend the notify completion table | 7.2.0 | 7.3.0 |
| 03-2008 | CT#39 | CP-080021 | 0017 | 1 | Mandatory use termination heartbeat | 7.3.0 | 8.0.0 |
| 06-2008 | CT#40 | CP-080263 | 0019 | | Usage of H.248.45 MGC Information Package | 8.0.0 | 8.1.0 |
| 06-2008 | CT#40 | CP-080263 | 0022 | 1 | Alignment of 3GPP Mp Codec Requirements | 8.0.0 | 8.1.0 |
| 06-2008 | CT#40 | CP-080263 | 0023 | 2 | Introduction of stage 3 procedure for Messaging Conference | 8.0.0 | 8.1.0 |
| 06-2008 | CT#40 | CP-080273 | 0021 | 1 | Alignment of SDP usage | 8.0.0 | 8.1.0 |
| 09-2008 | CT#41 | CP-080465 | 0025 | 1 | Alignment of Supported Transports | 8.1.0 | 8.2.0 |
| 09-2008 | CT#41 | CP-080465 | 0026 | 2 | Floor Control Procedures, Stage 3 | 8.1.0 | 8.2.0 |
| 09-2008 | CT#41 | CP-080465 | 0027 | | Message Conference Procedure for Stage 3 | 8.1.0 | 8.2.0 |
| 12-2008 | CT#42 | CP-080694 | 0028 | 3 | Update stage 3 profile for Message conference | 8.2.0 | 8.3.0 |
| | | | 0029 | 1 | Update stage 3 profile for Floor control | | |
| | | | 0030 | 1 | Alignment of Audit Value Procedure | | |
| | | | 0032 | | Remove Editor's Note on MSRP Session Identity | | |
| | | | 0033 | | Remove Editor's Note on Draft Version Indication | | |
| 03-2009 | CT#43 | CP-090040 | 0034 | 2 | Alignment of Audit Value Procedure | 8.3.0 | 8.4.0 |
| | | | 0035 | 1 | Modification of Reference for eMp | | |
| 03-2009 | | | | | CR 0034 was removed since it was Rel-7 only | 8.4.0 | 8.4.1 |
| 2009-12 | - | - | - | - | Update to Rel-9 version (MCC) | 8.4.1 | 9.0.0 |
| 2011-03 | CT#51 | CP-110275 | 0040 | 10 | ECN Support in Mp Interface | 9.0.0 | 10.0.0 |
| | | CP-110058 | 0041 | 1 | Handling of rtcp-fb SDP attribute and SDP attribute for RTCP APP feedback messages | | |
| 2011-06 | CT#52 | CP-110368 | 0042 | 1 | ECN Failure improvements | 10.0.0 | 10.1.0 |
| | | CP-110368 | 0044 | 1 | Alignment of 3GPP profiles with SG16 ECN package definition | | |
| 2011-12 | Ct#54 | CP-110776 | 0048 | | Missing ASN.1 encoding of H.248.69 packages | 10.1.0 | 10.2.0 |
| | | CP-110798 | 0045 | | Explicit Congestion Notification | | |
| | | CP-110796 | 0049 | | Missing ASN.1 encoding of mandatory and optional package tables | | |
| | | CP-110789 | 0050 | 1 | ECN Improvements | | |
| 2012-03 | CT#55 | CP-120015 | 0053 | | Missing Floor control signalling package ASN.1 encoding | 10.2.0 | 10.3.0 |
| 2012-06 | CT#56 | CP-120226 | 0054 | 1 | Reference update: draft-ietf-avtcore-ecn-for-rtp | 10.3.0 | 10.4.0 |
| 2012-09 | CT#57 | CP-120478 | 0055 | 3 | Support of Multimedia Priority Service (MPS) over Mp Interface – Stage 3 | 10.4.0 | 11.0.0 |
| 2012-12 | CT#58 | CP-120723 | 0061 | - | Mp interface updates of ECN Support Package | 11.0.0 | 11.1.0 |
| 2013-03 | CT#59 | CP-130013 | 0067 | 1 | Support of RTCP-FB for MTSI | 11.1.0 | 11.2.0 |
| 2013-06 | CT#60 | CP-130294 | 0063 | 2 | ECN relying reference change | 11.2.0 | 11.3.0 |
| 2013-09 | CT#61 | CP-130452 | 0068 | 3 | Introduction of support for Coordination of Video Orientation (CVO) | 11.3.0 | 12.0.0 |
| | | CP-130471 | 0069 | 3 | Introduction of support for Generic Image Attribute/signalling of image size | | |
| 2013-12 | CT#62 | CP-130636 | 0070 | 1 | No indication of generic image attributes in Mp | 12.0.0 | 12.1.0 |
| 2014-06 | CT#64 | CP-140248 | 0071 | 2 | ICE support for MRF in Mp interface | 12.1.0 | 12.2.0 |
| 2014-09 | CT#65 | CP-140520 | 0072 | 1 | MRFP Capability Change | 12.2.0 | 12.3.0 |
| 2014-12 | CT#66 | CP-140788 | 0075 | 1 | Adding support for EVS codec | 12.3.0 | 12.4.0 |
| | | CP-140786 | 0076 | 1 | E2e media security procedures for TCP based media (MSRP, BFCP) using TLS and KMS | | |
| 2015-03 | CT#67 | CP-150026 | 0077 | 2 | Support of CLUE bearer level signalling | 12.4.0 | 12.5.0 |
| | | CP-150026 | 0078 | 2 | CLUE carriage over Mp interface | | |
| 2015-06 | CT#68 | CP-150255 | 0079 | 1 | Updates on IMS Telepresence | 12.5.0 | 12.6.0 |
| 2015-12 | CT#70 | CP-150753 | 0082 | 2 | Reference update: IETF drafts | 12.6.0 | 12.7.0 |
| 2015-12 | CT#70 | CP-150783 | 0081 | 4 | Support for Video Enhancements by Region-of-Interest Information Signalling | 12.7.0 | 13.0.0 |
| 2016-03 | CT#71 | CP-160048 | 0083 | - | Removal of references to TS 26.235 | 13.0.0 | 13.1.0 |
| 2016-03 | CT#71 | CP-160034 | 0084 | 1 | Support of enhanced bandwidth negotiation mechanism for MTSI sessions | 13.0.0 | 13.1.0 |
| 2016-03 | CT#71 | CP-160021 | 0085 | 2 | Mp stage 3 to support SDP Capability Negotiation | 13.0.0 | 13.1.0 |
| 2016-06 | CT#72 | CP-160229 | 0086 | - | Clarifications related to the rate adaptation for media endpoints | 13.1.0 | 13.2.0 |
| 2017-03 | CT#75 | CP-170023 | 0087 | - | RFC 4572 obsoleted by draft-ietf-mmusic-4572-update | 13.2.0 | 13.3.0 |

| 2017-06 | CT#76 | CP-171015 | 0090 | - | Reference update: RFC 8122 | 13.3.0 | 13.4.0 |
|---------|-------|-----------|------|---|----------------------------|--------|--------|
| 2017-06 | CT#76 | CP-171014 | 0096 | - | Reference update: draft-ietf-mmusic-sctp-sdp | 13.3.0 | 13.4.0 |

# History

| Document history | | |
|---|---|---|
| V13.0.0 | March 2016 | Publication |
| V13.1.0 | April 2016 | Publication |
| V13.2.0 | August 2016 | Publication |
| V13.3.0 | March 2017 | Publication |
| V13.4.0 | July 2017 | Publication |