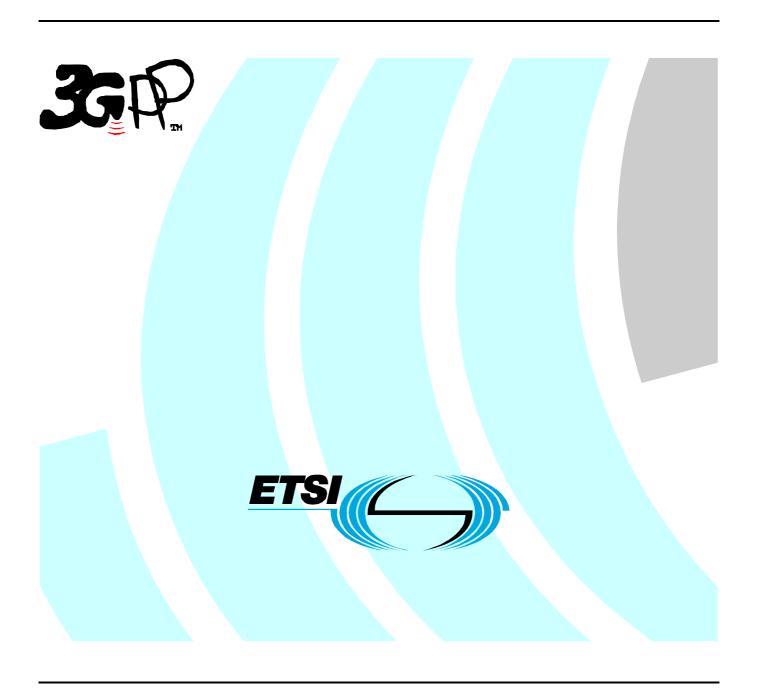
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650 Route des Lucioles F-06921 Sophia Antipolis Cedex - FRANCE

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

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Foreword

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Foreword

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1 Scope

The present document describes the protocol to be used on the Media Gateway Control Function (MGCF) – IM Media Gateway (IM-MGW) interface. This interface provides the Media Gateway Control for interworking between the IP Multimedia Subsystem (IMS) and CS domain (ISUP, BICC and SIP-I). The basis for this protocol is the H.248 protocol as specified in ITU-T. The IMS architecture is described in 23.228. The interaction of the MGCF-IM MGW interface signalling procedures in relation to the SIP, and BICC/ISUP signalling at the MGCF are described in 3GPP TS 29.163[4].

The interaction of the MGCF-IM MGW interface signalling procedures in relation to the IMS SIP and SIP-I on Nc at the MGCF are described in 3GPP TS 29.235[47].

This specification describes the application of H.248 on the Mn interface. Required extensions use the H.248 standard extension mechanism. In addition certain aspects of the base protocol H.248 are not needed for this interface and thus excluded by this profile.

In addition this profile provides support for PSTN/ISDN Emulation as required by ETSI TISPAN.

The specification contains a normative Annex defining the H.248.1 Profile in accordance with ITU-T recommendations for H.248.1 applications. Where there exists any contradiction between the normative Annex A and the rest of the specification, the Nornative Annex shall take precidence. The main body of the specification provides an introduction to the use of the profile for the Mn interface and introduces any specific functionality (e.g. new packages) associated to the Mn.

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 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".
- [3] 3GPP TS 29.205: "Application of Q.1900 series to Bearer Independent CS Network architecture; Stage 3"
- [4] 3GPP TS 29.163: "Interworking between the IM CN subsystem and CS networks Stage 3".
- [5] 3GPP TS 29.232: "Media Gateway Controller (MGC); Media Gateway (MGW) interface; Stage 3".
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[31] Void [32] IETF RFC 3555: "MIME Type Registration of RTP Payload Formats". [33] IETF RFC 3551: "RTP Profile for Audio and Video Conferences with Minimal Control" [34] Void [35] IETF RFC 4040: "RTP Payload Format for a 64 kbit/s Transparent Call". [36] IETF RFC 3389: "Real-time Transport Protocol (RTP) Payload for Comfort Noise (CN)". [37] ITU-T Recommendation V.152 (01/2005): "Procedures for supporting voice-band data over Innetworks". including Corrigendum 1. [38] ITU-T Recommendation H.248.4 (11/2000): "Gateway control protocol: Transport over Streat Control Transmission Protocol (SCTP)" including the Corrigendum 1 (03/2004).	[2	29]	ITU-T Recommendation H.248.14 (03/2002):"Inactivity timer package".
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 [34] Void [35] IETF RFC 4040: "RTP Payload Format for a 64 kbit/s Transparent Call". [36] IETF RFC 3389: "Real-time Transport Protocol (RTP) Payload for Comfort Noise (CN)". [37] ITU-T Recommendation V.152 (01/2005): "Procedures for supporting voice-band data over Innetworks". including Corrigendum 1. [38] ITU-T Recommendation H.248.4 (11/2000): "Gateway control protocol: Transport over Streat Control Transmission Protocol (SCTP)" including the Corrigendum 1 (03/2004). 	[3	32]	IETF RFC 3555: "MIME Type Registration of RTP Payload Formats".
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 [37] ITU-T Recommendation V.152 (01/2005): "Procedures for supporting voice-band data over Innetworks". including Corrigendum 1. [38] ITU-T Recommendation H.248.4 (11/2000): "Gateway control protocol: Transport over Streat Control Transmission Protocol (SCTP)" including the Corrigendum 1 (03/2004). 	[3	35]	IETF RFC 4040: "RTP Payload Format for a 64 kbit/s Transparent Call".
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Control Transmission Protocol (SCTP)" including the Corrigendum 1 (03/2004).	[3	37]	ITU-T Recommendation V.152 (01/2005): "Procedures for supporting voice-band data over IP networks". including Corrigendum 1.
[30] IETE REC 3556: "Session Description Protocol (SDP) Randwidth Modifiers for RTP Control	[3	38]	ITU-T Recommendation H.248.4 (11/2000): "Gateway control protocol: Transport over Stream Control Transmission Protocol (SCTP)" including the Corrigendum 1 (03/2004).
Protocol (RTCP) Bandwidth".	[3	39]	IETF RFC 3556: "Session Description Protocol (SDP) Bandwidth Modifiers for RTP Control Protocol (RTCP) Bandwidth".

[40]	3GPP TR 21.905: "Vocabulary for 3GPP Specifications"
[41]	ITU-T Recommendation H.248.12 (07/2001): "Gateway control protocol: H.248.1 packages for H.323 and H.324 interworking".
[42]	ITU-T Recommendation H.248.12a2 (08/2007): "Gateway control protocol: H.248.1 packages for H.323 and H.324 interworking Amendment 2: Transport Mechanism.
[43]	RFC 3309: "Stream Control Transmission Protocol (SCTP) Checksum Change"
[44]	ITU-T Recommendation H.248.41 (05/2006): "IP Domain Connection package ".
[45]	ITU-T Recommendation H.324 Amendment 1 (08/2006): "New Annex K "Media Oriented Negotiation Acceleration Procedure" and associated changes to Annex J".
[46]	ITU-T Recommendation H.248.72 (12/2009): "Gateway control protocol: ITU-T H.248 support for media-oriented negotiation acceleration (MONA)".
[47]	3GPP TS 29.235: "Interworking between SIP-I based circuit-switched core network and other networks".
[48]	3GPP TS 23.231:" SIP-I based circuit-switched core network; Stage 2".
[49]	ITU-T Recommendation H.248.71 (02/2010): "Gateway Control Protocol: RTCP support packages".
[50]	IETF RFC 4103: "RTP Payload for Text Conversation".
[51]	ITU-T Recommendation T.140: "Text conversation presentation protocol".
[52]	IETF RFC 4102: "Registration of the text/red MIME Sub-Type".
[53]	IETF RFC 2198: "RTP Payload for Redundant Audio Data".
[54]	ITU-T Recommendation V.18 (11/00): "Operational and interworking requirements for DCEs operating in the text telephone mode" including V.18 (2000) Amendment 1 (11/02): "Harmonization with ANSI TIA/EIA-825 (2000) text phones ".
[55]	ITU-T Recommendation G.168 (03/2009): "Digital network echo cancellers".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the [following] terms and definitions [given in ... and the following] apply.

Context (H.248): A context is an association between a number of Terminations. The context describes the topology (who hears/sees whom) and the media mixing and/or switching parameters if more than two terminations are involved in the association.

Package (**H.248**): Different types of gateways may implement terminations which have differing characteristics. Variations in terminations are accommodated in the protocol by allowing terminations to have optional properties. Such options are grouped into packages, and a termination may realise a set of such packages.

Termination (H.248): A termination is a logical entity on an MGW which is the source and/or sink of media and/or control streams. A termination is described by a number of characterising properties, which are grouped in a set of descriptors which are included in commands. Each termination has a unique identity (TerminationID).

Termination Property (H.248): Termination properties are used to describe terminations. Related properties are grouped into descriptors. Each termination property has a unique identity (PropertyID).

3.2 Symbols

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

Mn Interface between the media gateway control function and the IMS media gateway.

3.3 Abbreviations

For the purposes of the present document, the following abbreviations given in TR 21.905 [40] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [40].

AMR Adaptive MultiRate

BICC Bearer Independent Call Control

CN Core Network
CS Circuit-Switched

DTMF Dual Tone Multi Frequency

FFS For further study

GSM Global System for Mobile communications

IETF Internet Engineering Task Force

IM IP Multimedia

IM-MGW IP Multimedia Media Gateway IMS IP Multimedia Subsystem

IP Internet Protocol

ISDN Integrated Services Digital Network

ISUP ISDN User Part MG/MGW Media GateWay

MGC Media Gateway Controller
MGCF Media Gateway Control Function
MIME Multipurpose Internet Mail Extensions

n.a. not applicable

PDH Plesiochronous Digital Hierarchy
PES PSTN/ISDN Emulation Subsystem
PSTN Public Switched Telephone Network

PT Payload Type

R2 (ETSI TISPAN NGN) Release 2

RFC Request For Comment; this includes both discussion documents and specifications in the IETF

domain

RTCP RTP Control Protocol RTP Real-time Transport Protocol

SCTP Stream Control Transmission Protocol
SDH Synchronous Digital Hierarchy
SDP Session Description Protocol

SIP Session Description Protocol
SIP Session Initiation Protocol
SONET Synchronous Optical NETwork
SS Silence Suppression

SS7 Signalling System No. 7
TDM Time Division Multiplexing

TISPAN Telecommunications and Internet converged Services and Protocols for Advanced Networking

TMGW Trunking MGW

TS Technical Specification (3GPP, ETSI)

VBD VoiceBand Data

4 UMTS capability set

4.1 Capability set

The support of the Mn interface capability set shall be identified by the Mn profile and support of this profile shall be indicated in ServiceChange procedure.

The mandatory parts of this capability set shall be used in their entirety whenever it is used within the H.248 profile. Failure to do so will result in a non-standard implementation.

ITU-T Recommendation H.248.1 (05/02) [9] is the basis for this Capability Set. The compatibility rules for packages, signals, events, properties and statistics and the H.248 protocol are defined in ITU-T Recommendation H.248.1 [9]. Their use or exclusion for this interface is clarified in clause 12.

5 Naming conventions

5.1 MGCF/IM-MGW naming conventions

The MGCF shall be named according to the naming structure of the underlying transport protocol which carries the H.248 protocol.

For further definition of the Termination Names see Annex A.6.

5.2 Void

6 Topology descriptor

No special behaviour, for definition of use see Annex A. 5.

7 Transaction timers

No special behaviour, for definition of timers see Annex A.10.

8 Transport

Each implementation of the Mn interface should provide SCTP (as defined in IETF RFC2960 [15] and as updated by RFC3309 [43]), however other options are permitted within the profile. For further definition see Annex A12.

9 Multiple Virtual MG.

The support of multiple virtual MGW outlined in the subclause "Multiple virtual MGW" in ITU-T Recommendation H.248.1 [9] is optional.

10 Formats and codes

10.1 Signalling Objects

Table 10.1 shows the parameters which are required.

The coding rules applied in ITU-T Recommendation H.248.1 [9] for the applicable coding technique shall be followed for the UMTS capability set.

Table 10.1: required parameters

Signalling Object	H.248 Descriptor	Coding	
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). See Clause 10.2. 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). See Clause 10.2.</fmt>	
Bearer Service Characteristics	Local Descriptor or Remote Descriptor	As per Q.1950 [14]. For TMR, only values "3.1 kHz audio" or "speech" are required.	
Context ID	NA	Binary Encoding: As per ITU-T Recommendation H.248.1 [9] Annex A. Textual Encoding: As per ITU-T Recommendation H.248.1 [9] Annex B.	
IP Address	Local Descriptor or Remote Descriptor	<pre><connection address=""> in SDP "c-line"</connection></pre>	
Port	Local Descriptor or Remote Descriptor	<port> in SDP m-line. <transport> in SDP m-line shall be set to value "RTP/AVP" for voice or video service, and set to value "UDPTL" or "TCPTL"for T.38 service.</transport></port>	
mediatype	Local Descriptor or Remote Descriptor	<media> in sdp m-line "audio" for voice service, "video" for video service and "image" for T.38 service.</media>	
Reserve_Value	Local Control	ITU-T Recommendation H.248.1 [9] 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"-lineas per IETF RFC 3556 [39].</bandwidth>	
RtcpbwRR	Local Descriptor or Remote Descriptor	<bandwidth> in SDP "b:RR"-line as per IETF RFC 3556 [39].</bandwidth>	
RTCP Filter	Event descriptor	As for the EventDescriptor parameter in subclause 8.2.1.1.1/H.248.71[49] "Feedback Message Type ".	
RTPpayload	Local Descriptor or Remote Descriptor		
Termination ID	NA	Binary Encoding: As per ITU-T Recommendation H.248.1 [9] Annex A. Textual Encoding: As per ITU-T Recommendation H.248.1 [9] Annex B.	
Transaction ID	NA	Binary Encoding: As per ITU-T Recommendation H.248.1 [9] Annex A.	
Stream ID	Stream Descriptor	Textual Encoding: As per ITU-T Recommendation H.248.1 [9] Annex B. Binary Encoding: As per ITU-T Recommendation H.248.1 [9]	
Stream ID	Stream Descriptor	Annex A. Textual Encoding: As per 170-1 Recommendation 11.248.1 [9] Annex B.	
Muxdescriptor	Multiplex Descriptor	Binary Encoding: As per ITU-T Recommendation H.248.1 [9] Annex A. Textual Encoding: As per ITU-T Recommendation H.248.1 [9] Annex B.	
Highest Multiplex Level	Termination state	As for property "Highest multiplexing Level" in subclause 4.1.2/H.248.12 [41]	
Remote H223 capability	Local Control	As for property "Remote H.223 capability" in subclause 4.1.4/H.248.12 [41]	
Incoming Multiplex table	Local Control	As for property "Incoming Multiplex Table" in subclause 4.1.5/H.248.12 [41]	
Outgoing multiplex table	Local Control	As for property "Outgoing Multiplex Table" in subclause 4.1.6/H.248.12 [41]	
Incoming H245 message	Event descriptor	As for the EventDescriptor in subclause A.8.2.1/H.248.12a2 [42] "Incoming H.245 message"	

H245 message content	ObservedEvent descriptor	As for the ObservedEventDescriptor in subclause A.8.2.1.2/H.248.12a2 [42] "Contents of H.245 message".	
Outgoing H245 message	Signal descriptor	As for the signal "Outgoing H.245 Message " in subclause	
Outgoing H245 message content	Signal descriptor	A.8.3.1/H.248.12a2 [42] As for the additional parameter of the signal "Outgoing H.245 Message " in subclause A.8.3.1.1/H.248.12a2 [42]	
IP realm identifier	Local control	As for the property "IP realm identifier " in subclause 5.1.1/H.248.41[44]	
Inactivity timeout	EventDescriptor	As for the EventsDescriptor in subclause 5.2/H.248.14 "Inactivity Timeout"	
Inactivity timeout	ObservedEvent descriptor	As for the ObservedEventDescriptor in subclause 5.2/H.248.14 " Inactivity Timeout "	
Interwork H.245-RTCP	Signal descriptor	As for the EventDescriptor parameter in subclause 8.2.1.1.1/H.248.71[49] "Feedback Message Type ".	
BNC Release	EventDescriptor	As for the EventsDescriptor in subclause E.1.2.1/H.248.1 "Cause"	
BNC Release	ObservedEvent descriptor	As for the ObservedEventsDescriptor in subclause E.1.2.1/H.248.1 "Cause"	
Outgoing MONA preferences	Signal descriptor	As for the signal "Outgoing MONA preference message " in H.248. 72 [46] subclause 7.3.1	
Outgoing MONA preference content	Signal descriptor	As for the additional parameter of the signal " Outgoing MONA preference message" in H.248. 72 [46] subclause 7.3.1.1.1	
MONA Preference recv	Event descriptor	As for the EventDescriptor in H.248. 72 [46] subclause 7.2.2.1 "MONA Preference reception"	
MONA preference message content	ObservedEvent descriptor	As for the ObservedEventDescriptor in H.248.72 [46] subclause 7.2.1.2.1 "Contents of MONA preference message ".	
MONA Preference completed	Event descriptor	As for the EventDescriptor in H.248.72 [46] subclause 7.2.2 "MONA Preference negotiation completed"	
SPC Out	Signal descriptor	As for the additional parameter of the signal "Outgoing H.245 Message " in H.248. 72 [46] subclause 6.3.1.1	
SPC In	Observed event descriptor	As for the ObservedEventDescriptor parameter in H.248. 72 [46] subclause 6.2.2.1 ""Incoming H.245 message"	
SCP	Event descriptor	As for the EventDescriptor parameter in H.248. 72 [46] subclause 6.2.1. 1 "SCP".	
Mona Preference Channel reception	Event descriptor	As for the EventDescriptor in H.248. 72 [46] subclause 7.2.4 "MPC reception"	
Muxcode	ObservedEvent descriptor	As for the ObservedEventDescriptor in H.248. 72 [46] subclause 7.2.4.2.1 "Mux Code".	
Legacy Interworking Detected	Event descriptor	As for the EventDescriptor in H.248. 72 [46] subclause 7.2.3 "Legacy Detected"	
Forward media in MPC	Signal descriptor	As for the signal "Forward Media in Preconfigured Channel" in H.248.72 [46] subclause 7.3.2	
MPC MUX Code	Signal descriptor	As for the additional parameter of the signal "Forward Media in Preconfigure Channel" in H.248.72 [46] subclause 7.3.2.1	
MaxBitRate_Event	ObservedEvent descriptor	As for the EventDescriptor parameter "Max Bitrate"in subclause 8.2.1.2.2/H.248.71[49].	
MaxBitRate_Signal	Signal descriptor	As for the SignalDescriptor parameter "Max Bitrate" in subclause 8.3.1.1.2/H.248.71[49].	
UpdatePicture_Event	ObservedEvent descriptor	As for the EventDescriptor parameter in subclause 8.2.1.2.1/H.248.71[49] "Update Picture ".	
UpdatePicture_Signal	Signal descriptor	As for the SignalDescriptor parameter "Update Picture " in subclause 8.3.1.1.1/H.248.71[49].	
IP interface	Local control	As for the property "IP interface type" in subclause 15.2.11.1 in 3GPP TS 29.232 [5]	
Recommendation	on H.248.1 [9], Annex	lents "SDP_V", "SDP_M", "SDP_C", "SDP_A", and SDP_B" in ITU-T C.11, shall be used to encode the corresponding SDP lines. Other stails see Annex A. The SDP equivalents shall be used in the order	

NOTE: For binary encoding, the SDP equivalents "SDP_V", "SDP_M", "SDP_C", "SDP_A", and SDP_B" in ITU-T Recommendation H.248.1 [9], Annex C.11, shall be used to encode the corresponding SDP lines. Other SDP equivalents may be used, for details see Annex A. The SDP equivalents shall be used in the order specified for the corresponding SDP lines in IETF RFC 2327 [17]. Rules for the usage of SDP in ITU-T Recommendation H.248.1 [9] shall also be applied to the SDP equivalents. SDP description types (v=, m=, a= etc.) are not encoded. CR/LF are not encoded.

10.2 Codec Parameters

10.2.1 AMR and AMR-WB Codecs

On IMS terminations, the AMR and AMR-WB codecs are transported according to the IETF AMR RTP profile, IETF RFC 3267 [16]. 3GPP TS 26.236 [20] selects options applicable within 3GPP.

IETF RFC 3267[16] contains the MIME registration of the IETF AMR RTP profile with media type "audio" and media subtype of "AMR" and "AMR-WB". The AMR and AMR-WB codecs shall be signaled accordingly in the SDP "a=rtpmap"-line and a dynamic RTP payload type shall be used.

The selected options are expressed as MIME parameters in SDP "a=fmtp"-line. The following MIME parameters shall be supported on the Mn interface:

- "mode-set"
- "mode-change-period"

In addition the following MIME parameters may be supported on the Mn interface:

- "octet-align"
- "mode-change-neighbor" (for IMS this parameter shall be included and set to 1)
- "maxptime"
- "ptime"

For compatibility with GSM peers, the IM-MGW shall perform mode changes only in every second sent package.

Example of encoding of AMR codec

ABNF:

ASN.1:

```
LocalDescriptor{
  PropertyParams{
        PkgdName=0x000B001
                                          /*SDP_V */
           value= "0"
        PkgdName=0x000B008
                                          /*SDP C * /
           value= "IN IP4 $"
        PkgdName=0x000B00F
                                          /*SDP M * /
           value= "audio $ RTP/AVP 96"
        PkgdName=0x000B00C
                                          /*SDP_A * /
           value= "rtpmap:96 AMR/8000"
        PkgdName=0x000B00C
                                          /*SDP A * /
           value= "fmtp:96 mode-set=0,2,5,7;mode-change-period=2;mode-change-neighbor=1"
                                          /*SDP_A * /
        PkgdName=0x000B00C
           value= "maxptime:20"
                }}
```

NOTE: The c-line may be provided after m-line.

On RTP-CN (SIP-I) terminations speech codecs are supported according to 3GPP TS 29.232 [5] subclause 10.2.1.

10.2.2 DTMF Payload Type

On IMS and RTP-CN (SIP-I) terminations, DTMF is transported according to the IETF RFC 2833 [18] "telephone event" format.

IETF RFC 2833[18] contains the MIME registration with media type "audio" and media subtype "telephone-event". DTMF shall be signaled accordingly in the SDP "a=rtpmap"-line and a dynamic RTP payload type shall be used.

An IM-MGW supporting DTMF shall support the default options of the IETF RFC 2833 [18] "telephone event" format. Therefore, a support of optional MIME parameters of "telephone-event" is not required at the Mn interface.

10.2.3 Other Codecs

On IMS terminations, other codecs such as ITU-T codecs are transported according to the RTP payload formats in IETF RFC 3555[32]. 3GPP TS 29.163[4], clause B.2.5.4, specifies the options applicable within 3GPP.

IETF RFC 3555[32] contains the MIME registration with media type "audio" and corresponding media subtype.

For dynamic payload type being used the ITU-T codecs shall be signaled accordingly in the SDP "a=rtpmap"-line, where the selected options are expressed as MIME parameters in SDP "a=fmtp"-line.

For static payloads type being used ITU-T codecs shall be allowed to be signaled accordingly in the SDP "a=rtpmap"-line, when the selected options are expressed as MIME parameters in SDP "a=fmtp"-line. Otherwise the codec type is implied by the RTP payload type.

10.2.3.1 G.711 Codec

On IMS and RTP-CN (SIP-I) terminations, G.711 codec is transported according to IETF RFC 3551[33].

10.2.3.2 Clearmode

On IMS and RTP-CN (SIP-I) terminations, Clearmode codec is transported according to IETF RFC 4040[35].

When the MGC determines that a 64 kbit/s unrestricted bearer service is requested, the clearmode codec shall be used. A Dynamic Payload type with CLEARMODE as encoding name shall be included in both the local and remote descriptor.

The behaviour of the MGW shall then conform to IETF RFC 4040[35]. All voice and signal processing functions such as silence suppression, comfort noise insertion and gain adjustment shall be automatically turned off. The MGW shall inherit the same QoS objectives as the ISDN bearer service.

10.2.3.3 Silence suppression and comfort noise

On RTP-CN (SIP-I) terminations silence suppression and comfort noise are supported according to 3GPP TS 29.232 [5] subclause 10.2.3.4.For IMS terminations the following text applies.

Silence Suppression (SS) mode is direction-independent and shall be supported call/bearer individually. Silence suppression mode must be explicitly enabled and disabled. Default shall be a disabled SS mode.

If a codec has built-in support for silence suppression and comfort noise insertion, and an a=line has been defined in IETF RFC3551[33] or IETF RFC 3555 [32] to activate or de-activate these features, the activation or deactivation of these features shall be indicated using the a= line according to IETF RFC 3551[33]and IETF RFC 3555[32]. If the selected codec does not have built in support for silence suppression and comfort noise (CN) insertion, the CN payload code defined in RFC 3389[36] may be included in the media description.

E.g (for ITU-T Recommendation G.711 A-law codec):

```
v=0
c=IN <address type> <connection address>
m=audio <port number> RTP/AVP 8 13
a=ptime: 10
```

If the CN payload is included in the Local Descriptor, the MGW shall be prepared to receive CN packets during silence periods. This action corresponds to an implicit enabling of the SS mode in receiving direction.

If the CN payload is included in the Remote Descriptor, the MGW shall send CN packets during silence periods. This action corresponds to an implicit enabling of the SS mode in sending direction.

Comfort noise generation, voice activity detection and discontinuous transmission algorithms are outside the scope of the present document.

10.2.3.4 VBD codec

Voiceband data refers to traffic from facsimile, modem or text telephony applications.

On IMS terminations, voiceband data traffic is transported for facsimile /modem or data/ modem (but not text/modem, see sub clause 10.2.3.5) according to ITU-T Recommendation V.152 [37] and its Corrigendum 1. ITU-T Recommendation G.711 must be used as VBD codec. The RTP Payload Type (PT) codepoint, "0" or "8" or a value from the dynamic PT range , is used in the MG.

- NOTE 1: Use of "0" or "8" is indicating to the MG that only inband-based VBD stimuli must be detected. Both peering MGs are consequently not directly synchronized in their state transitions between "voice" and "VBD" modes.
- NOTE 2: Use of "a value from the dynamic PT range" is indicating a VBD RTP packet according to ITU-T Recommendation V.152 [37]. The MGW may offer then an enhanced VBD service.

Upon detection of voiceband facsimile/modem or data/modem data traffic, the Media Gateway shall autonomously switch from Audio mode to VBD mode with VBD codec.

Transitioning between Audio mode and VBD mode is possible in both directions. The procedures for transitioning between these two operation modes are described in ITU-T Recommendation V.152 clause 10/V.152 [37]. Any state transition requires the detection of a "VBD stimuli" (see ITU-T Recommendation V.152 clause 9/V.152 [37]). The IM-MGW shall be compliant with ITU-T Recommendation G.168 [55] on detecting VBD.

For Real-Time Text Telephony support within IMS at the IMS termination see subclause 10.2.3.5.

10.2.3.5 Real-Time Text Telephony Media

On IMS terminations, text is transported according to IETF RFC 4103 [50] "text/t140" conversation RTP payload format and coded according to ITU-T Recommendation T.140 [51].

If redundancy is used per IETF RFC 2198 [53], another payload type number needs to be provided for the redundancy format.

IETF RFC 4103 [50] contains the MIME registration with media type "text" and media subtype "t140". IETF RFC 4102 [52] contains the MIME registration with media type "text" and media subtype "red" (for redundancy coding variant).

RTP- Real-Time Text shall be signalled in a distinct SDP m-line accordingly in the SDP "a=rtpmap"-line and a dynamic RTP payload type shall be used.

Example of SDP which describes RTP Real-Time Text transport on port 11000 without redundancy:

m=text 11000 RTP/AVP 98 a=rtpmap:98 t140/1000

Example of SDP which describes RTP Real-Time Text transport on port 11000, but also utilizes IETF RFC 2198 [53] to provide two levels of redundancy for the text packets:

m=text 11000 RTP/AVP 98 100 a=rtpmap:98 t140/1000 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98

When Real-Time Text Telephony is configured at the IMS Termination in the IM-MGW and G.711 encoding is configured at peer CS side Termination and the terminations are through-connected the IM-MGW shall

- monitor the CS side termination incoming PCM streams for text telephony in accordance with provisioned inband text telephony tone types at the CS side termination and, if multiple inband text telephony tone types are provisioned, in accordance with ITU-T Recommendation V.18 [54];
- forward any detected incoming text telephony media at the CS side termination towards the IMS termination text stream; and
- multiplex any Real Time Text payload received from the IMS side to the CS side termination outgoing PCM streams for text telephony in accordance with provisioned inband text telephony tone type at the CS side termination in accordance with ITU-T Recommendation V.18 [54].

11 Mandatory Support of SDP and H.248 Annex C information elements

See Annex A.15.

12 General on packages and Transactions

The use of "Overspecified" (e.g. range of values) and "Underspecifed" (e.g. "?") parameter specification shall not be permitted except where explicitly indicated in or referenced by the Mn interface specification.

Commands on ROOT Termination shall only use the NULL Context.

12.1 Profile Details

VOID.

NOTE: Profile now defined in normative Annex A.

13 Void

14 Call independent H.248 transactions

See section A.17.1

15 Transactions towards IM CN Subsystem

15.1 Procedures related to a termination towards IM CN SubsystemFor Transactions towards IM CN Subsystem see A.17.2.

15.2 IMS packages

None

16 Transactions towards ISUP

16.1 Procedures relating to a termination towards ISUP

See section A.17.3.

16.2 ISUP packages

None

17 Transactions towards BICC

17.1 Procedures related to a termination towards BICC

See section A.17.4

17.2 BICC packages

This Clause is only applicable for terminations towards BICC Networks. The support of terminations towards BICC networks is optional.

No new packages for terminations towards BICC Networks are defined in the present specification. See Clause 12.1.14 for reused packages from other specifications.

If the Nb framing protocol (see 3GPP TS 29.415 [21]) is applied at the termination towards the BICC network, the following package shall be applied:

3GUP package (see subclause 15.1.1 of 3GPP TS 29.232 [5]);To enable bearer modification at OoBTC capable networks on Nb interface (see 3GPP TS 23.153 [22]) at the termination towards the BICC network, the following package shall be applied:

Modification of Link Characteristics Bearer Capability (see subclause 15.1.5 of 3GPP TS 29.232 [5]);

Annex A (normative): Profile Description

A.1 Profile Identification

Table A.1/1: Profile version

Profile name:	threegimscsiw
Version:	3

A.2 Summary

This Profile describes the minimum mandatory settings and procedures required to fulfil the Media Gateway control requirements for a) the interworking scenario between 3GPP IMS and 3GPP CS or PSTN/ISDN and b) the interworking scenario between NGN and PSTN/ISDN (i.e ETSI IMS-PSTN/ISDN, ETSI PES-PSTN/ISDN).

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 manadatory 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[9]) when those commands are used for other procedures that affect the same descriptor.A.3 Gateway Control Protocol Version

A.3 Gateway Control Protocol Version

ITU Recommendation H.248.1 Version 2 [9] shall be the version supported.

A.4 Connection Model

Table A.4/1: Connection Model

Maximum number of contexts:	No restriction
Maximum number of terminations per context:	2 (NOTE 1)
	32 (NOTE 2)
Allowed terminations type combinations in a Context	All (NOTE 3)
NOTE 4. Command of 0 to making tions are a context in an expire of the TICE	AAN Comment of manner them to be to making them.

NOTE 1: Support of 2 terminations per context is required for TISPAN. Support of more than two terminations per context (e.g. for monitoring) is optional.

NOTE 2: Support of 32 termination per context is required for 3GPP

NOTE 3: For TISPAN NGN R2 only the following is required:

- Context[a](IMS, TDM),
- Context[b](TDM, TDM),
- Context [c] (TDM),
- Context [d] (IMS).

A.5 Context Attributes

Table A.5/1: Context attributes

(Context Attribute Supported Values Supported		
Topology		Optional	All
	Priority Indicator Optional 0-15		
E	Emergency Indicator Yes Not Applicable		Not Applicable
NOTE:	NOTE: The "Topology" attribute is optional for example support of monitoring. If requested and not		toring. If requested and not
	supported error code 444 shall be returned		

A.6 Terminations

A.6.1 Termination Names

A.6.1.1 General

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

With ephemeral ATM/AAL2 and IP endpoint bearer types the internal structure of Termination ID is irrelevant for MGW and MGC and therefore Termination ID is only a numeric identifier for the termination. When bearer type is a physical timeslot within TDM circuit the Termination ID structure shall follow the Termination naming convention for TDM circuit bearer.

Ephemeral terminations are further denoted in the profile by the following:

- BICC (meaning applies to terminations towards BICC)
- BICC ATM (meaning applies to terminations towards BICC with ATM transport)
- BICC IP (meaning applies to terminations towards BICC with IP transport)
- IMS (meaning applies to terminations toward IMS)
- Multiplex (meaning applies to terminations performing multiplexing)
- RTP-CN (meaning applies to terminations towards SIP-I on Nc)

A.6.1.2 ASN.1 Encoding

A.6.1.2.1 General Structure

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:

Termination	
type	X

Termination type:

Length 3 bits

Values:

000 Reserved

001 Ephemeral termination

010 TDM termination

011 - 110 Reserved

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

X:

Length 29 bits.

Usage dependent on Termination type. TDM terminations specified below in subclause 5.2.2. Other usage unspecified.

The use of wildcarding for the Termination Id shall be performed using 1 octet only.

A.6.1.2.2 Termination naming convention for TDM terminations

Table C.6.1.2.2/1 ASN.1 coding

Termination	PCM system	Individual
type (=010)		

PCM system:

Length 24 bits

Usage unspecified. Uniquely identifies PCM interface in MGW

Individual:

Length: 5 bits

Max. of 32 individuals (timeslots) per PCM system (max. 24 for a 24 channel system)

A.6.1.3 ABNF coding:

A.6.1.3.1 General Structure

The following general structure of termination ID shall be used:

TerminationID = "ROOT" / pathName / "\$" / "*"; according to ITU-T H.248.1 [9] Annex B.

A.6.1.3.2 Termination Naming Convention for TDM Terminations

A.6.1.3.1.1 Naming Structure

A hierarchical naming structure is recommended for physical Terminations.

The PCMsystem is recommended to follow the following physical and digital signal hierarchy:

```
PCMsytem = <unit-type1>_<unit #>/<unit-type2>_<unit #>/...
```

The <unit-type> identifies the particular hierarchy level.

Some example values of <unit-type> are:

"s", "su", "stm4", "stm1", "oc3", "ds3", "e3", "ds2", "e2", "ds1", "e1" where "s" indicates a slot number and "su" indicates a sub-unit within a slot.

Leading zeroes MUST NOT be used in any of the numbers ("#") above.

The <unit #> is a decimal number which is used to reference a particular instance of a <unit-type> at that level of the hierarchy. Value ranges always starting with one.

The number of levels and naming of those levels is based on the physical hierarchy within the Media Gateway.

Here are some examples of the Termination structure:

- TDM Terminations at SDH STM-1 ports: tdm/s_<Card ID>/stm1_<STM1 ID>/e1_<E1 ID>/<channel #> e.g., tdm/s 2/stm1 3/e1 17/25
- 2. TDM Terminations at PDH E1 ports (e.g., for "PCM system" only applications): tdm/s_<Card ID>/e1_<E1 ID>/<channel #>

```
e.g., tdm/s_2/e1_17/25
```

NOTE 1: This Termination naming convention may be used to align with ASN.1 TDM Termination names as defined in A.6.1.2.2. The alignment must take into account the numbering scheme of "<E1 ID>" with the "PCM system" field, and the upper level(s) are regarded as prefix ("tdm/s-<Card ID>" versus "3-bit codepoint for 'TDM' ").

NOTE 2: See also clause 3/H.248.33 concerning "PCM system" definition.

3. TDM Terminations at SONET OC-3 ports: tdm/s_<Card ID>/oc3_<OC3 ID>/ds1_<DS1 ID>/<channel #> e.g., tdm/s_2/oc3_3/ds1_17/22

A.6.1.3.1.2 Syntactical Specification

The syntax specification may be used for the population of valid TDM TerminationID structures for.

```
ABNF (IETF RFC 4234) is used for the syntax specification.

pathName = TDMToken SLASH (PCMsystem / "*")
```

TDMToken = "tdm"

PCMsystem = 0*(HierarchyLevelHIGHToken SLASH) HierarchyLevelLOWToken

HierarchyLevelHIGHToken = (UnitTypeToken "_" UnitNumber)

 $Hierarchy Level LOW Token \ = (Unit Type Token \ "_" \ Wildcard) \ / \ Channel \ / \ Wildcard$

UnitTypeToken = "ChassisToken" / "SDHToken" / "SONETToken" / "PDHToken"

ChassisToken = "s" / "su" ; slot, sub-unit within slot

SDHToken = "stm4" / "stm1" ; relevant is capacity, but not electrical or optical interface type

SONETToken = "oc12" / "oc3"

PDHToken = "ds3" / "e3" / "ds2" / "e2" / "ds1" / "e1"; ANSI & ETSI

UnitNumber = 1*DIGIT

Channel = % d0-31 / % d0-23; value range E1/T1 system

Wildcard = "*"

A.6.1.3.1.3 Wildcarding

Wildcarding (CHOOSE, ALL) is allowed for number fields ("<unit #>").

Examples for wildcarding:

1. TDM Terminations at SDH STM-1 ports:

```
e.g., wildcarding on top level: tdm/*
```

e.g., wildcarding on slot level: tdm/s 3/*

e.g., wildcarding on STM-1 level: tdm/s 3/stm1 4/*

e.g., wildcarding on E1 level: tdm/s_2/stm1 4/e1 49/*

2. TDM Terminations at PDH E1 ports:

e.g., wildcarding on E1 level: tdm/s 1/e1 2/*

A.6.1.3.1.4 Heterogeneous TDM Port Configurations

An homogeneous TDM port configuration relates to a MGW with a single port type for physical Terminations. There is therefore a single TDM Termination name structure in use.

Heterogeneous TDM configurations means different port types, either by different signal hierarchies, like SDH/STM-1 and SDH/STM-4, and/or a mix of SDH and PDH interfaces. The number of port types in use is determining the number of TDM Termination name structures. With heterogeneous configurations the TDM Termination name structure may be aligned, for instance, by using the "highest common digital signal hierarchy" as highest Termination name hierarchical level. There is consequently a single TDM Termination name structure with a "flattened" hierarchy.

Example:

MGW with SDH/STM-1 and PDH/E1 ports. Common denominator is "e1", a selected TDM Termination name might be therefore a common two-level structure with "tdm/e1_<E1 ID>/<channel #>". The unit types "s", "su" or "stm1" are not used here.

NOTE: This concept is followed in A.6.1.2.2, ASN.1 for TDM Terminations.

A.6.1.3.2 Termination Naming Convention for Ephemeral Terminations

A.6.1.3.2.1 Naming Structure

An alphanumeric pathname structure is recommended for Ephemeral terminations:

ephemeral/<string of alphanumeric characters or "/">

e.g., Ephemeral/1/0/40000

A.6.1.3.2.2 Syntactical Specification

The syntax rules may be used for the population of valid ephemeral TerminationID structures for. ABNF (IETF RFC 4234) is used for the syntax specification.

ABNF coding:

pathName = EphToken SLASH EPHsystem

EphToken = "Ephemeral"; so called prefix

; The maximum length of 'pathname' is defined in Annex B.2/H.248.1.

EPHsystem = 0*(HierarchyLevelHIGHToken SLASH) HierarchyLevelLOWToken

Hierarchy Level HIGHToken = 1*alphanum

 $Hierarchy Level LOW Token \ = Individual \ / \ Wildcard$

alphanum = ALPHA / DIGIT

Individual = 1*DIGIT

Wildcard = "\$" / "*"

A.6.2 Multiplexed terminations

Table A.6.2/1: Multiplexed terminations

MultiplexTerminations Supported		Yes (NOTE)
NOTE:	OTE: Yes for multimedia interworking and No for voice interworking.	

Table A.6.2/2: Multiplex Types Supported

Multiplex types supported:		H.223
Maximum number of terminations connected to multiplex:		TBD (NOTE)
NOTE:	NOTE: It is not clear what is the exact purpose of this parameter; further clarification within H.248.1 core protocol is required before this property shall be used.	

A.7 Descriptors

A.7.1 Stream Descriptor

Table A.7.1/1: Stream descriptors

Maximum number of streams per termination type	2 (NOTE)
NOTE: Value 2 for multimedia interworking and Real-Time	e Text interworking and value 1 for voice interworking.

A.7.1.1 Local Control Descriptor

Table A.7.1.1/1: Local Control Descriptor

		Termination Type	Stream Type
Reserve group used:	No		
Reserve value used:	Yes (NOTE 1)	Terminations Toward IMS and RTP-CN	Not Applicable
NOTE 1: The "Reserve value" parameter is, inter alia, required for negotiation of multiple payload types, ie ITU-T Rec.			

NOTE 1: The "Reserve value" parameter is, inter alia, required for negotiation of multiple payload types, ie ITU-T Rec. G.711, comfort noise (according ITU-T Rec. G.711 Appendix II), DTMF tone relay (see RFC2833 [18]).

Table A.7.1.1/2: Allowed Stream Modes

Termination Type	Stream Type	Allowed StreamMode Values
TDM	Not Applicable	SendOnly, RecvOnly, SendRecv, Inactive
IMS	Audio, Video, Text (NOTE 1)	SendOnly, RecvOnly, SendRecv, Inactive
BICC IP, RTP-CN	Not Applicable	SendOnly, RecvOnly, SendRecv, Inactive
BICC ATM	Not Applicable	SendOnly, RecvOnly, SendRecv, Inactive
Multiplex (NOTE 2)	Audio, Video	SendOnly, RecvOnly, SendRecv, Inactive

NOTE 1: Audio and Video for multimedia interworking, Audio and Text for Real-Time Text interworking, and Not applicable for voice interworking.

NOTE 2: Specific for multimedia interworking.

Events Descriptor A.7.2

Table A.7.2/1: Events Descriptor

Events settable on termination types and stream types:		Yes	
	Event ID	Termination Type	Stream Type
	Detect_Digit(Digit) (d0 to dd, inclusive)	ALL except ROOT	Not Applicable
	BNC Established	Terminations towards BICC network	Not Applicable
	BNC Modification Failed	Terminations towards BICC network	Not Applicable
	BNC Modified	Terminations towards BICC network	Not Applicable
	Tunnel	Terminations towards BICC network with IP transport	Not Applicable
	g/cause	ALL except ROOT	Not Applicable
	g/sc	ALL except ROOT	Not Applicable
	ct/cmp	TDM	Not Applicable
	chp/mgcon	ROOT	Not Applicable
	Hangterm/thb	ALL except ROOT	Not Applicable
	ocp/mg_overload	ROOT	Not Applicable
	it/ito	ROOT	Not Applicable
	Start tone detected (tonedet/std)	RTP-CN, IMS, TDM, BICC	Only applicable to audio stream
	End Tone detected (tonedet/etd)	IMS	RTP-CN, TDM, BICC Only applicable to audio stream
	Optimal Codec Évent (threegtfoc/codec_modify)	TDM, BICC, RTP-CN	Not Applicable
	Codec List Event (threegtfoc/ distant codec_list)	TDM, BICC, RTP-CN	Not Applicable
	TFO Status Event (threegtfoc/TFO_status)	TDM, BICC, RTP-CN	Not Applicable
	Incoming H.245 message (h245tp/h245msgin, 0x00 b4/0x0001)	Multiplex	Not Applicable
	MONA Preference reception (monapref/monaprefmsgin, 0x00f8/0x0001)	Multiplex	Not Applicable
	MONA Preference negotiation completed (monapref/ monaprefcompl, 0x00f8/0x0002)	Multiplex	Not Applicable

	Legacy Detected (monapref/Legdet, 0x00f8/0x0003)	Multiplex	Not Applicable
	MPC reception (monapref/mpcrec,	Multiplex	Not Applicable
	0x00f8/0x0004) RTCP Feedback Message	IP	Not Applicable
	Detection (rtcpfb/det, 0x00f6/0x0001)	IF	Not Applicable
NOTE:	minations towards BICC netwo	ork dependent on option to suppo	rt such interworking, e.g. not

Table A.7.2/2: Event Buffer Control

NOTE1: BNC Release event is defined in formats and codes table 10.1 and refers to the g/cause event.

Event Buffer Control used:	No

Table A.7.2/3: Keep active

Keepactive used on events:	Conditional (NOTE 1)
NOTE 1: Required for 3GPP, not required by TISPAN NGN R2 TMGW.	

Table A.7.2/4: Embedded events

Embedded events in an event descriptor: No
--

Table A.7.2/5: Embedded signals

E	mbedded signals in an event descriptor:	Yes
NOTE:	NOTE: Used if MONA procedures are supported in the Add Multiplex Termination procedure.	

A.7.3 EventBuffer Descriptor

Table A.7.3/1: Event Buffer Descriptor

Event Buffer descriptor used:	No

A.7.4 Signals Descriptor

Table A.7.4/1: Signals Descriptor

Signals settable depe	endant on termination or streams		Yes	
	types:		NOTE: "Yes" means any signal not listed below	
			ed on any termination or pt Signals on ROOT	
			hall not be supported.	
If yes	Signal ID	Termination Type	Stream Type / ID	
	ct/*	TDM	Not Applicable	
	gb/*	BICC	Not Applicable	
	bt/*	BICC IP	Not Applicable	
	cg/rt cg/bt cg/ct	TDM	Not Applicable	
	an/apf	ALL except ROOT and Multiplex	d Not Applicable	
	Outgoing H.245 Message (h245tp/h245msgout, 0x00b4/0x0001)	Multiplex	Not Applicable	

Outgoing MONA preference	Multiplex	Not Applicable
message		
(monapref/monaprefmsgout,		
0x00 f8/0x0001)		
Forward Media in Preconfigured	Multiplex	Not Applicable
Channel		
(monapref/Preconfchannelmedia,		
0x00f8/0x0002)		
Feedback Message Sending	IP	Not Applicable
(rtcpfb/fbmesssend,		
0x00f6/0x0001)		

Table A.7.4/2: Signal Lists

Signals Lists s	Signals Lists supported:		Conditional (NOTE 1)
If yes	Termination Type Suppo	tion Type Supporting Lists: ALL except ROOT	
	Stream Type Supporting lists: ALL		ALL
	Maximum number of s	signals to a FFS <integer></integer>	
	signal list:		-
	Intersignal delay pa	rameter	No
	supported:		
NOTE 1: Required for 3GPP, not required for TISPAN NGN R2 TMGW.			
NOTE 2: This field requires at least version 3 of the H.248.1 protocol			

Table A.7.4/3: Overriding Signal type and duration

Signal type and duration supported:	Optional
NOTE: Not required for TISPAN NGN R2 TMGW.	

Table A.7.4/4: Notify completion

	Notify completion	on supported:		Yes
	If yes	SignalID Type of completion supported		Type of completion supported
		All Tones and Annou	incements	TO, EV, SD and NC
Request	tID Parameter	NO		
Su	pported:			
NOTE: This field requires at least version 3 of the H.248.1 protocol.				

Table A.7.4/5: Signals played simultaneously

Signals played simultaneously:	No

Table A.7.6/6: Keep active

Keepactive used on signals:	Conditional (NOTE 1)
NOTE 1: Required for 3GPP, not required for TISPAN NGN R2 TMGW.	

A.7.5 DigitMap Descriptor

Table A.7.5/1: DigitMap Descriptor

A.7.6 Statistics Descriptor

Table A.7.6/1: Statistics Descriptor

Statistics reported on subtract:	No (for TDM Terminations)
	Optional For Ephemeral Terminations (NOTE 1)
NOTE 1: This is required for TISPAN NGN R2 TMGW	

A.7.7 ObservedEvents Descriptor

Table A.7.7/1: Observed Events Descriptor

Event detection time supported:	No

A.7.8 Topology Descriptor

Table A.7.8/1: Topology Descriptor

Allowed triples:	Optional (NOTE 1):
	(T1, T2, isolate) (T1, T2, oneway) (T1, T2, bothway)
NOTE 1: If not supported then error code 444 shall be returned.	

A.7.9 Error Descriptor

Table A.7.9/1: Error Codes Sent by MGCF

Supported H.248.8 Error Codes:	FFS < list of individual numbers>
Supported Error Codes defined in packages:	All error codes defined in supported packages shall be
	supported.

Table A.7.9/2: Error Codes Sent by MGW:

Supported H.248.8 Error Codes:	FFS< list of individual numbers>
Supported Error Codes defined in packages:	All error codes defined in supported packages shall be
	supported.

A.7.10 TerminationState Descriptor

Table A.7.10/1: TerminationState Descriptor

TerminationState: ServiceStates:	InService/OutofService
TerminationState: EventBufferControl:	OFF

A.8 Command API

A.8.1 Add

Table A.8.1/1: Descriptors used by Command Add Request

Descriptors used by Add Request:	Events, Signals, Media (LocalControl, Local And Remote),
	Audit

Table A.8.1/2: Descriptors used by Command Add Reply

Descriptors used by Add Reply:	Events, Signals, Media (LocalControl, Local And Remote), Error, Audit
	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: - The Error Descriptor - SDP properties returned in "Reserve IMS"
	Connection Point" and "Reserve IMS Connection Point and Configure Remote Resources" procedures, as specified in A.17.2.2 and A.17.2.4

A.8.2 Modify

Table A.8.2/1: Descriptors used by Command Modify Request

Descriptors used	by Modify Request:	Events, Signals, Media (LocalControl, Local And Remote),
		Audit

Table A.8.2/2: Descriptors used by Command Modify Reply

Descriptors used by Modify Reply:	Events, Signals, Media (LocalControl, Local And Remote), Error, Audit
	When command request excludes an Audit Descriptor, the MGW response shall only include descriptors which contained underspecified or overspecified properties in the command reques. Furthermore, only those properties that were underspecified or overspecified in the request shall be sent in the reply. Exceptions to this rule are: - The Error Descriptor
	- SDP properties returned in "Configure IMS Resources" procedure as specified in A.17.2.3.

A.8.3 Subtract

Table A.8.3/1: Descriptor used by Command Subtract Request

	Descriptors used by Subtract Request:	AUDIT (empty) or NONE
--	---------------------------------------	-----------------------

Table A.8.3/2: Descriptor used by Command Subtract Reply

Descriptors used by Subtract Reply:	None or Statistics
	When command request contains "Audit(empty)", then no statistics are returned. Otherwise, connection statistics are returned in the Subtract reply dependent on the supported packages (see clause A.14).

A.8.4 Move

Table A.8.4/1: Command Move

	Move command used:	Optional(NOTE)
NOTE: If not supported then error code 443 shall be returned.		

Table A.8.4/2: Descriptors used by Move Request

Descriptors used by Move Request:	Events, Signals, Media (LocalControl, Local And
	Remote). Audit

Table A.8.4/3: Descriptors used by Move Reply

Descriptors used by Move Reply	Events, Signals, Media (LocalControl, Local And
	Remote), Error, Audit.
	When command request excludes an Audit Descriptor,
	the MGW response shall only include descriptors which
	contained underspecified or overspecified properties in
	the command request, with the exception of the Error
	Descriptor. Furthermore, only those properties that were
	underspecified or overspecified in the request shall be
	sent in the reply.

A.8.5 Auditvalue

Table A.8.5/1: Auditvalue

Audited Properties:	Property Name and Identity	Descriptor
Termination ID	TerminationState: - TDM: ALL (indicating 1 TDM group NOTE3), individual termination (NOTE 4) - ATM/IP: individual termination - Root (MGW Audit)	TerminationState Descriptor
Termination ID	MGC information (mgcinfo) TDM: Individual Termination	LocalControl Descriptor
Termination ID	For Packages: - Root - TDM/ATM/IP: individual termination (NOTE1)	Packages Descriptor (NOTE2)
Termination ID	None (MGW Audit) : - Root	Audit (empty) Descriptor
Audited Statistics:	None	
Audited Signals:	None	
Audited Events:	None	
Packages Audit Possible	Yes	

The purpose to audit an individual Termination is to retrieve MGC Information if supported. NOTE1:

NOTE2:

Support of this capability is optional.

TDM Group equates to an E1 or T1 PCM System. NOTE3:

NOTE 4: Auditing a single termination of a TDM group is an alternative to the wildcarded audit (TDM: ALL) to derive the

service state of the TDM group. All the terminations of the TDM group share the same service state.

Auditcapability A.8.6

Table A.8.6/1: Auditcapability

Audited Properties:	Property Name and Identity	Descriptor
	FFS	FFS
Audited Statistics:	None	
Audited Signals:	None	
Audited Events: None		
NOTE: AuditCapability con	nmand is not supported by the ETSI TISPAN profil	e.

A.8.7 Notify

Table A.8.7/1: Descriptors Used Notify

Des	scriptors used by Notify Request or Reply:	ObservedEvents, Error
NOTE: The Error Descriptor shall not be used in Notify Request.		

A.8.8 Service Change

Table A.8.8/1: Service Change Methods and Reasons Sent By MGCF

ServiceChange Reasons supported:		
"901 Cold Boot" (Optional)		
"902 Warm Boot" (Optional)		
"903 MGC Directed Change" (Mandatory)		
"905 Termination Taken Out Of Service" (Optional)		
"905 Termination Taken Out Of Service" (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. NOTE 1: ROOT Only. NOTE 2: Not involving more than 1 MGCF. No support of handoff relates to a network deployment scenario with		

Table A.8.8/2: Service Change Methods and Reasons Sent By MGW

"primary H.248 systems only", which translates to no geographic redundancy of the MGCF.

ServiceChange Methods supported:	ServiceChange Reasons supported:
Restart	"900 Service Restored" (Mandatory)
	"901 Cold Boot" (Mandatory) (NOTE1)
	"902 Warm Boot" (Mandatory) (NOTE1)
	"910 Media Capability Failure " ALL except ROOT
	(Optional)
	"913 Signal Capability Failure " ALL except ROOT
	(Optional)
	"914 Event Capability Failure " ALL except ROOT
	(Optional)"916 Packages Change (Optional)
	"917 Capability Change (Optional)
Graceful	"904 Termination Malfunction" ,ALL except ROOT, (Mandatory)
	"905 Termination Taken Out Of Service",(Mandatory)
	"906 Loss Of Lower Layer Connectivity", ALL except ROOT,(Mandatory)
	"907 Transmission Failure" ALL except ROOT,(Mandatory)
	"908 MG Impending Failure" ROOT only (Mandatory)
Forced	"904 Termination Malfunction" ,ALL except ROOT, (Mandatory)
	"905 Termination Taken Out Of Service" (Mandatory)
	"906 Loss Of Lower Layer Connectivity" ALL except ROOT, (Mandatory)
	"907 Transmission Failure" ALL except ROOT, (Mandatory)
	"908 MG Impending Failure" ROOT only (Mandatory)
Handoff (NOTE1, NOTE 2)	"903 MGC Directed Change" (Mandatory)
Disconnected (NOTE1)	"900 Service Restored" (Mandatory)
	"916 Packages Change (Optional)
	"917 Capability Change (Optional)
	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 oth	er commands in a single message.
NOTE 1: ROOT Only.	
NOTE 2: In response to a MGC Ordered Re-	Register.

Table A.8.8/3: Service Change Address

ServiceChangeAddress used:	No

Table A.8.8/4: Service Change Delay

ServiceChangeDelay used:	No
dei viceonangebelay useu.	110

Table A.8.8/5: Service Change Incomplete Flag

	ServiceChange Incomplete Flag used:	No
NOTE:	This field requires at least version 3 of the H.248.1	protocol.

Table A.8.8/6: Service Change Version

Version used in ServiceChangeVersion:	2

Table A.8.8/6: Service Change Profile

ServiceChangeProfile mandatory:	Yes

Table A.8.8/8: H.248.18 Profile negotiation

Profile negotiation as per H.248.18:	No

A.8.9 Manipulating and auditing context attributes

Table A.8.9/1: Manipulating and auditing context attributes

Context Attributes Manipulated:	Topology (Optional), Emergency, Priority
Context Attributes Audited:	None

A.9 Generic command syntax and encoding

Table A.9/1: Encodings

Supported Encodings:	Binary (optional) (NOTE 1)
	Text (optional) (NOTE 2):
	The receiver shall support:
	Short Token Notation
	Long Token Notation
If binary encoding, is indefinite length encoding	Yes (NOTE3)
supported:	

- NOTE 1: For 3GPP Mn interface binary encoding is strongly recommended if only one encoding is selected to ensure interoperability.
- NOTE 2: Text encoding is required by TISPAN NGN R2 TMGW. For implementations providing both 3GPP Mn and TISPAN functionality text encoding is required as a minimum.
- NOTE3: 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.

A.10 Transactions

Table A.10/1: Transactions per Message

Maximum number of TransactionRequests / TransactionReplies / TransResponseAcks / Segment Replies per message:	2(NOTE 1) 10(NOTE 2)
NOTE 1: Maximum required by TISPAN NGN R2 NOTE 2: Maximum required by 3GPP	

Table A.10/2: Commands per Transaction Requests

Maximum number of commands per Transaction	2(NOTE 1)	
request:	Unspecified(NOTE 2)	
NOTE 1: Maximum required by TISPAN NGN R2		
NOTE 2: Not specified by 3GPP		

Table A.10/3: Commands per Transaction Reply

Maximum number of commands per Transaction reply: 2 (NOTE 1)		
	Unspecified (NOTE 2)	
NOTE 1: Maximum required by TISPAN NGN R2		
NOTE 2: Not specified by 3GPP however for auditing with wildcarded requests (e.g TDM E1) then the reply may include		
up to 32 commands to indicate the termination state.		

Table A.10/4: Commands for Wildcarded Responses

Wildcarded responses may be requested for:	Modify, Subtract, AuditValue
--	------------------------------

Table A.10/5: Procedures for Wildcarded Responses

Procedures that make use of wildcarded responses:		Release Bearer, Release Termination, Audit Value,	
		Release IMS Termination, Release TDM Termination	
NOTE:	NOTE: Used when multiple terminations are released with one command and in audit responses where multiple		
	terminations are implied by the audit request.		

Table A.10/6: Optional Commands

Commands able to be marked "Optional":	ALL

Table A.10/7: Transaction Timers

Transaction Timer:	Value	
normalMGExecutionTime	Provisioned	
normalMGCExecutionTime	Provisioned	
MGOriginatedPendingLimit	Provisioned	
MGCOriginatedPendingLimit	Provisioned	
MGProvisionalResponseTimerValue	Provisioned	
MGCProvisionalResponseTimerValue Provisioned		

A.11 Messages

The MGC/MGW may be named according to the naming structure of the underlying transport protocol which carries the H.248 protocol.

It is however recommended that MGC and MG names are in the form of fully qualified domain names. For example the domain name of the MGC may be of the form mgc1.whatever.net and the name of the MG may be of the form mg1.whatever.net.

The "Message Identifier" in the H.248 messages may be used by the MGC and MG to identify the originator of the message.

A.12 Transport

Table A.12/1: Transport

Supported Transports: • SCTP(recommended) (NOTE1).		
SCTP/M3UA(optional) optional – as defined as defin		
in IETF RFC 3332 [24] with options detail		
	in 3GPP TS 29.202 [25] (NOTE2).	
	UDP(optional).	
If using SCTP as defined in IETF RFC 2960 [15] the MGW shall always be the node to perform the "Initiation".		
H.248 is "SCTP user" in this case of H.248/SCTP/IP based transport according ITU-T Rec. H.248.4 [38]. The		
number of used SCTP Streams for traffic of the H.248 Control Association must be defined, see § 8/H.248.4		
[38]. A single SCTP Stream is the default assumption ("Single-Stream Mode") in this Profile.		
2 This is slightly different with regards to SCTP encapsulation. H.248 is "M3UA user" in this case of		
H.248/M3UA/SCTP/IP based transport. H.248 Messages are corresponding to M3UA user protocol data units.		
"SCTP multistreaming" may be also applied (see § 1.4.7/RFC 3332). If not then the complete M3UA traffic is		
mapped on a single SCTP Stream, i.e., the Single-Stream Mode.		
Checksum calculation for SCTP shall be supported as specified in RFC 3309 [43] instead of the method		
specified in RFC 2960 [12].		
	If using SCTP as defined in IETF RFC 2960 [15] the H.248 is "SCTP user" in this case of H.248/SCTP number of used SCTP Streams for traffic of the H [38]. A single SCTP Stream is the default assump This is slightly different with regards to SCTP encently and the H.248/M3UA/SCTP/IP based transport. H.248 Me "SCTP multistreaming" may be also applied (see smapped on a single SCTP Stream, i.e., the Single Checksum calculation for SCTP shall be supported.	

Table A.12/2: Segmentation

	Segmentation Supported:	No
NOTE:	This field requires at least version 3 of the H.248.1	protocol.

Table A.12/3: Support of Control Association Monitoring

Control Association Monitoring Supported:	Monitoring mechanism is dependent on used H.248 transport (see Table A.12/1):	
	SCTP: inherent capability of SCTP (NOTE 1)	
	SCTP/M3UA: inherent capability of SCTP	
	UDP:	
OTE 1: Use of H.248.14 for this is FFS		

A.13 Security

Table A.13/1: Security

Supported Security:	None

A.14 Packages

Table A.14/1: Mandatory packages

Package Name	Package ID	Version
Generic (see ITU-T Recommendation H.248.1 [9] Annex E.1);	g, (0x0001)	v1
Base Root Package (see ITU-T Recommendation H.248.1 [9] Annex E.2);	root, (0x0002)	v2
Basic Continuity Package (see ITU-T Recommendation H.248.1 [9] Annex E.10);	ct, (0x000a)	v1
TDM Circuit Package (see ITU-T Recommendation H.248.1 [9] Annex E.13);	tdmc, (0x000d)	v1
Hanging Termination Detection package (see ITU-T Recommendation H.248.36 [27]).	hangterm (0x0098)	v1

Table A.14/2: Optional packages

Package Name	Package ID	Version	Support dependent on:
Tone Detection Package (see ITU-T Recommendation H.248.1 [9] Annex E.4);	tonedet, (0x0004) 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.	v1	Mandatory for 3GPP
Basic DTMF Generator Package (see ITU-T Recommendation H.248.1 [9] Annex E.5);	dg, (0x0005)	v1	Mandatory for 3GPP
DTMF Detection Package (see ITU-T Recommendation H.248.1 [9] Annex E.6);	dd, (0x0006)	v1	Mandatory for 3GPP
Media Gateway Resource Congestion Handling Package (see ITU-T Recommendation H.248.10 [12]).	chp, (0x0029)	v1	Mandatory for 3GPP
Generic Announcement Package (see ITU-T Recommendation H.248.7 [28]). Only Fixed Part is required.	an(0x001d)	v1	3GPP applications
Bearer Characteristics Package (see ITU-T Recommendation Q.1950 [23] annex A3).	bcp (0x001e	V2	Terminations Towards BICC
Generic Bearer Connection Package (see ITU-T Recommendation Q.1950 [23] annex A.6).	Gb, (0x0021)	v1	Interworking with BICC
Tone Generator Package (see ITU-T Recommendation H.248.1 [9] Annex E.3);	tongen, (0x0003)	v1	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.
Call Progress Tones Generator Package (see ITU-T Recommendation H.248.1 [10] annex E.7).	Cg, (0x0007)	v1	
Basic Call Progress Tones Generator with Directionality, (see ITU-T Recommendation Q.1950 [23] annex A.8).	bcg, (0x0023)	v1	Services provided by network
Expanded Call Progress tones Generator Package (see ITU-T Recommendation Q.1950 [23] annex A.9).	xcg, (0x0024	v1	Services provided by network
Basic Services Tones Generation Package, (see ITU-T Recommendation Q.1950 [23] annex A.10).	srvtn, (0x0025)	v1	Services provided by network
Bearer Control Tunnelling Package (see ITU-T Recommendation Q.1950 [23] annex A.7).	Bt, (0x0022)	v1	Interworking with BICC and IP transport
Expanded Services Tones Generation Package (see ITU-T Recommendation Q.1950 [23] annex A.11).	xsrvtn, (0x0026)	v1	Services provided by network
Intrusion Tones Generation Package (see ITU-T Recommendation Q.1950 [23] annex A.12).	Int, (0x0027)	v1	Services provided by network
3GUP package (see subclause 15.1.1 of 3GPP TS 29.232 [5])	threegup, (0x002f)	v1	Interworking with BICN PLMN
Modification of Link Characteristics Bearer Capability (see subclause 15.1.5 of 3GPP TS 29.232 [5])	threegmlc, (0x0046)	v1	Interworking with BICN PLMN with Codec Modification
Inactivity (see ITU-T Recommendation. H248.14 [29])	it, (0x0045)	v1	Only applicable for UDP transport.
TFO package (see subclause 15.2.2 of 3GPP TS 29.232 [5])	threegtfoc, (0x0031)	v2	
Media Gateway Overload Control Package (see ITU-T Recommendation H.248.11 [28]).	ocp, (0x0051)	v1	

MGC Information Package (see ITU-T Recommendation H.248.45 [30])	mgcinfo, (0x00a0)	v1	This package may be supported as an operator option. For this Profile the information string shall be limited to 32 octets in length.
RTP (ITU-T Recommendation H248.1 [9] Annex E.12) (NOTE 1)	rtp, (0x000c)	V1	Used for connection statistics
H324 package (see ITU-T Recommendation H.248.12 [41])	h324,(0x002c)	V1	Multimedia calls
H.245 Transport Package (see ITU-T Recommendation H.248.12a2 [42])	h245tp, (0x00b4)	V1	Multimedia calls
IP Domain connection package (see ITU-T Recommendation H.248.41 [44])	ipdc, (0x009d)	V1	Multiple IP realms supported
H.245 Transport Package for SPC use (see H.248.72 [46] subclause 6)	h245tpspc, (0x00f7)	V1	Multimedia calls with MONA
MONA preference package (see H.248.72 [46] subclause 7)	monapref, (0x00f8)	V1	Multimedia calls with MONA
3G Interface Type package (see subclause 15.2.11 of 3GPP TS 29.232 [5])	threegint (0x00e3)	v1	
RTCP Feedback Message package (see H.248.71 [49] subclause 8) NOTE 1: support of RTP Package does not require su	rtcpfb, (0x00f6)	V1	Multimedia interworking between the H.245 messages in 3G-324M at the CS side and the corresponding RTCP messages used by MTSI terminals at the IMS side

Table A.14/3: Package Provisioning Information

Package Name	Property, Parameter, Signal, Event ID	Provisioned Value:	
Generic Announcement (H.248.7)	Fixed Announcement Play, AV	Provisioned	
NOTE: This may not be required by TISPAN NGN R2 TMGW.			

A.14.1 Generic Package

Table A.14.1/1: Package Usage Information For Generic Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:
None	-	-	-	-
Signals	Mandatory/ Optional	Used in c	ommand:	Duration Provisioned Value:
None	-		-	-
	Signal Parameters	Mandatory/	Supported	Duration Provisioned
		Optional	Values:	Value:
	-	-	-	-
Events	Mandatory/		Used in command:	•
	Optional			
Cause (g/cause.	M		ADD, MOD, NOTIFY	1
0x0001/0x0001)	Event	Mandatory/	Supported	Provisioned Value:
(NOTE)	Parameters	Optional	Values:	
	None	-	-	-
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:

	Generalcause	M	"NR" Norma Release (0x00 "UR" Unavai Resources (0x0 "FT" Failure Temporary (0x0 "FP" Failure Permanent (0x0 "IW" Interwork Error (0x0000 "UN" Unsuppo (0x0006)	01) lable 002) , 003) , 004) ing 5)
	Failure Cause (FailureCause, 0x0002)	0	Octet String	Not Applicable
Events	Mandatory/ Optional		Used in com	nmand:
Signal Completion.	M		ADD, MOD, MOV	/E, NOTIFY
(g/sc,	Event	Mandatory/	Supported	
0x0001/0x0002)	Parameters	Optional	Values:	
	None	-	-	-
	ObservedEvent	Mandatory/	Supported	Provisioned Value:
	Parameters	Optional	Values:	
	Signal Identity	М	pkgdName syr	
	Termination Method	М	"TO" (0x0001) S	ignal -
			timed out or	lata d
			otherwise compl	etea
			"EV" (0x0002)	
			Interrupted by ev	vent
			"SD" (0x0003)	
			Halted by new	
			Signals descript	
			"NC" (0x0004) N	
			completed, othe	r
	Signal List Id	0	cause	
Statistics	Mandatory/	Used in comma	integer	Supported Values:
Glatistics	Optional	OGCA III COIIIIII		Jupportou Values.
None	-	-		-
None Error Codes	-	- Manda	tory/ Optional	-

NOTE: This event may also be used to report temporary errors in the MGW for both IMS, BICC and TDM connections where the termination is not out of service and thus sending a Service Change is inappropriate. On receipt of this event, the MGC is expected to release the connection in the MGW and force release the associated call. An example of such an error could be loss of RTP on an IMS termination.

A.14.2 Base Root Package

Table A.14.2/1: Package Usage Information For Base Root Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:
root/maxNumberOfContexts	0	AuditValue	1 and up	Implementati on Specific
root/maxTerminationPerContext	0	AuditValue	AuditValue See A.4	
root/normalMGExecutionTime	0	MOD	MOD Integer	
root/normalMGCExecutionTime	0	MOD	Integer	Operator Defined
root/MGProvisionalResponseTimerValue	0	MOD	Integer(Norm alMGExecutio nTime + networkdelay)	Operator Defined
root/MGCProvisionalResponseTimerValue	O	MOD	Integer(NormalMGCE xecutionTime + networkdelay)	Operator Defined
root/MGCOriginatedPendingLimit	0	MOD	Integer	Operator Defined
root/MGOriginatedPendingLimit	0	MOD	Integer	Operator Defined
Signals	Mandatory/ Optional	Used in comn	nand:	Duration Provisioned Value:
None	_	-		-
	_			
	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:
Events	Parameters -	Optional -	Values:	Provisioned
Events		Optional -		Provisioned Value:
Events None	Parameters - Mandatory/ Optional -	Optional - Used i	Values:	Provisioned Value: -
	Parameters - Mandatory/	Optional -	Values:	Provisioned Value:
	Parameters - Mandatory/ Optional - Event	Optional Used i Mandatory/ Optional Mandatory/	Values:	Provisioned Value: - Provisioned
	Parameters - Mandatory/ Optional - Event Parameters - ObservedEvent	Optional - Used i Mandatory/ Optional -	Values:	Provisioned Value: Provisioned Value: Provisioned
None Statistics None	Parameters - Mandatory/ Optional - Event Parameters - ObservedEvent Parameters - Mandatory/	Optional - Used i Mandatory/ Optional - Mandatory/ Optional - Used in comm	Values:	Provisioned Value: Provisioned Value: Provisioned Value: Supported
None Statistics	Parameters - Mandatory/ Optional - Event Parameters - ObservedEvent Parameters - Mandatory/	Optional - Used i Mandatory/ Optional - Mandatory/ Optional - Optional	Values:	Provisioned Value: Provisioned Value: Provisioned Value: Supported
None Statistics None	Parameters - Mandatory/ Optional - Event Parameters - ObservedEvent Parameters - Mandatory/	Optional - Used i Mandatory/ Optional - Mandatory/ Optional - Used in comm	Values:	Provision Value: Provision Value: Provision Value: Supported

A.14.3 Basic DTMF Generator Package

Table A.14.3/1: Package Usage Information For Basic DTMF Generator Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:
None	-	-	-	-
Signals	Mandatory/ Optional	Used in command:		Duration Provisioned Value:
DTMF character 0	M	ADD, MOD, MOVE		
,d0	Signal Parameters	Mandatory/	Supported	Duration Provisioned
DTMF character 1		Optional	Values:	Value:

d1	None				
DTMF character 2	None	-		-	-
d2					
~-					
DTMF character 3					
d3					
DTMF character 4					
d4					
DTMF character 5					
d5					
DTMF character 6					
d6					
DTMF character 7					
d7					
DTMF character 8					
d8					
DTMF character 9					
d9					
DTMF character *					
ds					
DTMF character #					
do					
DTMF character A					
da					
DTMF character B					
db					
DTMF character C					
dc					
DTMF character D					
dd			L		
Events	Mandatory/		Used i	in command	d:
	Optional				
None	-			-	
	Event	Mandatory/		oorted	Provisioned Value:
	Parameters	Optional	Val	ues:	
	-	-		-	-
	ObservedEvent	Mandatory/		oorted	Provisioned Value:
	Parameters	Optional	Val	ues:	
	-	-		-	-
Statistics	Mandatory/	Used in comma	ınd:	,	Supported Values:
	Optional				
None	-	-			-
Error Codes	L	Manda	tory/ Option	nal	
None	-				
	OTMF Signal Ids shall be	used, not the Tone Ids	within the F	PlayTone Sig	ınal ld.
Ciny tho E	Oignaniae chair be	acce, not the rene lac		,	

A.14.4 Basic DTMF Detection Package

Table A.14.4/1: Package Usage Information For Basic DTMF Generator Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:
None	-	-	-	-
Signals	Mandatory/ Optional	Used in c	ommand:	Duration Provisioned Value:
None	-		-	-
	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:
	-	-	-	-
Events	Mandatory/ Optional		Used in command	:
d0, "0"	M		ADD, MOD, NOTIF	Y
d1, "1"	Event	Mandatory/	Supported	Provisioned Value:
d2, "2"	Parameters	Optional	Values:	
d3, "3"	None	-	-	-

d4, "4" d5, "5"	ObservedEvent Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:
d6, "6"	None		-	-
d7, "7"				
d8, "8"				
d9, "9"				
ds, "*"				
do, "#"				
da, "A" or "a"				
db, "B" or "b"				
dc, "C" or "c"				
dd, "D" or "d"				
Statistics	Mandatory/ Optional	Used in comma	nd:	Supported Values:
None	-	-		-
Error Codes		Manda	tory/ Optional	
None			-	

A.14.5 TDM Circuit Package

Table A.14.5/1: Package Usage Information For TDM Circuit Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:	
Echo Cancellation, tdmc/ec	M	ADD, MOD, MOVE	ALL	Default= Off (False)	
Gain Control, tdmc/gc	Not Used	-	-	-	
Signals	Mandatory/ Optional	Used in c	ommand:	Duration Provisioned Value:	
None	-	-	-	-	
	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:	
	-	-	-	-	
Events	Mandatory/ Optional		Used in commar	nd:	
None	-		-		
	Event Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:	
	-	-	-	-	
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:	
	-	-	-	-	
Statistics	Mandatory/ Optional	Used in comma	mand: Supported Values:		
None	-	-		-	
Error Codes		Manda	tory/ Optional		
None			-		

A.14.6 MGW Congestion Package

Table A.14.6/1: Package Usage Information For Media Gateway 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 Congestion,	M/		MOD, NOTIF	Υ		
chp/mgcon(0x0001)	Event Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:		
	None	-	-	-		
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:		
	Reduction (0x0001)	М	0-100	Not Applicable		
Statistics	Mandatory/ Optional	Used in command: Supporte		Supported Values:		
None	-	=		-		
Error Codes		Mandatory/ Optional				
None			-			

A.14.7 Continuity Package

Table A.14.7.1: Package Usage Information For Basic Continuity Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:	
None	-	-	-	-	
Signals	Mandatory/ Optional	Used in c	ommand:	Duration Provisioned Value:	
Continuity Test,	M	ADD, MO	D, MOVE	Default	
ct/ct	Signal Parameters	Mandatory/	Supported	Duration Provisioned	
Respond, ct/rsp		Optional	Values:	Value:	
	None	=	-	-	
Events	Mandatory/ Optional	Used in command:			
Completion,	M/		ADD, MOD, MOVE, NO	TIFY	
ct/cmp(0x0005)	Event	Mandatory/	Supported	Provisioned Value:	
	Parameters	Optional	Values:		
	None	-	-	-	
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:	
	result, res(0x0008)	M	success, failure	Not Applicable	
Statistics	Mandatory/ Optional	Used in command: S		Supported Values:	
None	-	-		-	
Error Codes		Mandatory/ Optional			
None			-		

A.14.8 Announcement Package

Table A.14.8/1: Package Usage Information For Announcement Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:
None	-	-	-	-
Signals	Mandatory/ Optional	Used in command:		Duration Provisioned Value:
Fixed	M	ADD, MO	D, MOVE	<value applicable="" not=""></value>
Announcement Play, apf(0x0001)	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:
	Announcement name, an(0x0001)	M	enumeration	<value applicable="" not=""></value>
	Number Of Cycles, noc(0x0002)	M	Any Integer	-

	Announcement Variant, av(0x0003)	0	string	-	
	Announcement	M	Internal, External	-	
	Direction, di(0x0004)				
Events	Mandatory/		Used in commar	nd:	
	Optional				
None	-		-		
	Event	Mandatory/	Supported	Provisioned Value:	
	Parameters	Optional	Values:		
	-	-	-	-	
	ObservedEvent	Mandatory/	Supported	Provisioned Value:	
	Parameters	Optional	Values:		
	-	-	-	-	
Statistics	Mandatory/ Optional	Used in command: Supported Value		Supported Values:	
None	-	-		-	
Error Codes		Mandatory/ Optional			
None			-		

A.14.9 Bearer Characteristics Package

Table A.14.9/1: Package Usage Information For Bearer Characteristics Package

Properties	Mandatory/ Optional	Used in command:	Suppor Value:		Provisioned Value:
BNC Characteristics (BCP/BNCChar,0x001e/0x01)	М	ADD	AAL type IP/RT		Not Applicable
Signals	Mandatory/ Optional	Used in o	command:	D	uration Provisioned Value:
None	-		-	-	
	Signal	Mandatory/	Suppor	ted D	uration Provisioned
	Parameters	Optional	Value	s:	Value:
	-	-	-		-
Events	Mandatory/ Optional	Used in command:			
None	-		-		
	Event	Mandatory/	Suppor	ted I	Provisioned Value:
	Parameters	Optional	Value	s:	
	-	-	-		-
	ObservedEvent	Mandatory/	Suppor		Provisioned Value:
	Parameters	Optional	Value	S:	
8: 11:11	-		-		- 137.1
Statistics	Mandatory/ Optional	Used in command: Supported V		orted Values:	
None	-	-		· · · · · · · · · · · · · · · · · · ·	-
Error Codes	Mandatory/ Optional				
None			-		

A.14.10 Generic Bearer Connection Package

Table A.14.10/1: Package Usage Information For Generic Bearer Connection Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:
None	-	-	-	-
Signals	Mandatory/ Optional	Used	Duration Provisioned Value:	
Establish BNC	M	А	DD, MOD	Not Applicable
(GB/EstBNC,0x0021/0x01)	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:

	Not Applicable	-		-	Not Applicable
Modify BNC	Ö		MOD		Not Applicable
(GB/ModBNC,0x0021/0x02)	Signal Parameters	Mandatory/	Sup	ported	Duration
		Optional	Va	lues:	Provisioned
					Value:
	Not Applicable	-		-	Not Applicable
Release BNC	M (NOTE 1)		MOD		Not Applicable
(GB/RelBNC,0x0021/0x03)	Signal Parameters	Mandatory/		ported	Duration
		Optional		lues:	Provisioned Value:
	General cause	0		Release/	Not Applicable
	(Generalcause,0x01)			⁄ailable	
				es/ Failure	
				ary/ Failure	
				nanent/	
				king Error/ pported	
	Failure Cause	0		STRING	Not Applicable
	(Failurecause,0x02)	O	OCIEI	STRING	Not Applicable
	Reset (Reset,0x03)	0		/ 1	Not Applicable
Events	Mandatory/		_	command:	
	Optional				
BNC Change	M		ADD, M	OD,NOTIFY	
(GB/BNCChange,0x0021/0x01)	Event	Mandatory/		ported	Provisioned
	Parameters	Optional	-	lues:	Value:
	Type (Type ,0x01)	M		stablished /	Not Applicable
				Modified/	
				lodification	
	ObservedEvent	Mandatory/		ilure ported	Provisioned
	Parameters	Optional		portea lues:	Value:
1					
	Type (Type ()x()1)	M/	Rearer F	stahlished /	I NOT ADDIICADIA
	Type (Type,0x01)	M/		stablished / Modified/	Not Applicable
	Type (Type,0x01)	M/	Bearer	Modified/	Not Applicable
	Type (Type,0x01)	M/	Bearer Bearer M		Not Applicable
Statistics	Type (Type,0x01) Mandatory/ Optional	M/ Used in con	Bearer Bearer M Fa	Modified/ lodification ilure	orted Values:
None	Mandatory/	Used in con	Bearer Bearer M Fa nmand:	Modified/ lodification ilure Suppo	
None Error Codes	Mandatory/	Used in con	Bearer Bearer M Fa	Modified/ lodification ilure Suppo	
None Error Codes None	Mandatory/	Used in con Mandat	Bearer Bearer M Fa nmand:	Modified/ lodification ilure Suppo	

A.14.11 Call Progress Tones Generator Package v1

Table A.14.11/1: 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 c	ommand:	Duration Provisioned Value:
Ringing Tone,	M	ADD, MO	D, MOVE	Not Applicable
cg/rt	Signal Parameters	Mandatory/ Optional	Mandatory/ Supported	
	-	-	-	-
Busy Tone,	0	ADD, MO	D, MOVE	Not Applicable
cg/bt	Signal Parameters	Mandatory/ Optional	Mandatory/ Supported	
	-	-	-	-
Congestion Tone,	0	ADD, MO	D, MOVE	Not Applicable
cg/ct	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:
	-	-	-	-
	-	-	-	-

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

A.14.12 Basic Call Progress Tones Generator with Directionality

Table A.14.12/1: Package Usage Information For Basic Call Progress Tones Generator with Directionality Package

None	Properties	Mandatory/	Used in .	Suppo		Provisioned Value:	
Dial Tone (bcg/bdt, 0x0023/0x0040) Common to (bcg/bdt, 0x0023/0x0040) Signal parenters (bcg/brt, 0x0023/0x0041) Signal parenters (bcg/brt, 0x0023/0x0041) Signal parenters (bcg/brt, 0x0023/0x0042) Signal parenters (bcg/brt, 0x0023/0x0044) Signal parenters (bcg/brt, 0x0023/0x0045) Signal parenters (bcg/brt, 0x0023/0x0046) Signal parenters (bcg/brt, 0x0023/		Optional	command:	value) S:		
Dial Tone (bcg/bdt,				L			
Signal Parameters Mandatory/ Optional Signal Parameters Supported Values: Va	<u> </u>	-					
Ringing Tone (bcg/brt,0x0023/0x0041) Busy Tone (bcg/bt),0x0023/0x0042) Congestion Tone (bcg/bt),0x0023/0x0043) Special Information Tone (bcg/bt),0x0023/0x0044) Warring Tone (bcg/bt),0x0023/0x0045) Payphone Recognition Tone (bcg/bt),0x0023/0x0046) Call Waiting Tone (bcg/bt),0x0023/0x0047) Caller Waiting Tone (bcg/bcyr, 0x0023/0x0049) Pay Tone (bcg/bcyr, 0x0023/0x0049) Pay Tone (bcg/bcyr, 0x0023/0x0049) Events Mandatory/ Optional Parameters Optional Values: Value: Default=External Default=E		0		D, MOVE		Value	
(bcg/brt,0x0023/0x0041) Busy Tone (bcg/bbt,0x0023/0x0042) Congestion Tone (bcg/bbt,0x0023/0x0043) Special Information Tone (bcg/bst,0x0023/0x0044) Warning Tone (bcg/bpt,0x0023/0x0045) Payphone Recognition Tone (bcg/bpt,0x0023/0x0046) Call Waiting Tone (bcg/bcw,0x0023/0x0047) Caller Waiting Tone (bcg/bcw,0x0023/0x0048) Pay Tone (bcg/bpy,0x0023/0x0049) Used in command: Optional None Event Parameters Mandatory/ Optional Supported Values: 	0x0023/0x0040)	Signal	Mandatory/	Suppo	rted	Duration Provisioned	
Busy Tone		Parameters	Optional	Value	es:	Value:	
(bcg/bbt,0x0023/0x0042)		Tone Direction	М	Internal / E	xternal	Default=External	
Congestion Tone		(btd, 0x0001)					
(bcg/bct,0x0023/0x0043) Special Information Tone (bcg/bsit,0x0023/0x0044) Warning Tone (bcg/bsit,0x0023/0x0045) Payphone Recognition Tone (bcg/bpt,0x0023/0x0046) Call Waiting Tone (bcg/bpt,0x0023/0x0047) Caller Waiting Tone (bcg/bcr, 0x0023/0x0048) Pay Tone (bcg/bpt, 0x0023/0x0048) Pay Tone (bcg/bpt, 0x0023/0x0049) Events							
Special Information Tone							
Chcg/bsit,0x0023/0x0044 Warning Tone							
Warning Tone (bcg/bwt,0x0023/0x0045) Payphone Recognition Tone (bcg/bpt,0x0023/0x0046) Call Waiting Tone (bcg/bcw,0x0023/0x0047) Caller Waiting Tone (bcg/bcv,0x0023/0x0048) Pay Tone (bcg/bpy, 0x0023/0x0048) Pay Tone (bcg/bpy, 0x0023/0x0049) Events Mandatory/ Optional	Special Information 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) Pay Tone (bcg/bpy, 0x0023/0x0049) Used in command: Sevents Mandatory/ Optional None - - - - - ObservedEvent Parameters Mandatory/ Optional Statistics Mandatory/ Optional None - - - Used in command: Supported Values: Provisioned Value: - Used in command: Supported Values: - - - - - - - - - - - - - - - - - - - - - - - - - - <td>(bcg/bsit,0x0023/0x0044)</td> <td></td> <td></td> <td></td> <td></td> <td></td>	(bcg/bsit,0x0023/0x0044)						
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) Events Mandatory/ Optional None - Event Parameters Optional Mandatory/ ObservedEvent Parameters Optional None Statistics Mandatory/ Optional Mandatory/ Optional Values: - - Statistics Mandatory/ Optional Values: - Used in command: Provisioned Value: Provisioned Value: Provisioned Value: Values: - Used in command: Supported Provisioned Value:	Warning Tone						
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) Events Mandatory/ Optional None - Event Parameters Optional Mandatory/ ObservedEvent Parameters Optional None Statistics Mandatory/ Optional Mandatory/ Optional Values: - - Statistics Mandatory/ Optional Values: - Used in command: Provisioned Value: Provisioned Value: Provisioned Value: Values: - Used in command: Supported Provisioned Value:	(bcg/bwt,0x0023/0x0045)						
Tone							
Call Waiting Tone (bcg/bcw,0x0023/0x0047) Caller Waiting Tone (bcg/bcr, 0x0023/0x0048) Pay Tone (bcg/bpy, 0x0023/0x0049)							
Call Waiting Tone (bcg/bcw,0x0023/0x0047) Caller Waiting Tone (bcg/bcr, 0x0023/0x0048) Pay Tone (bcg/bpy, 0x0023/0x0049)	(bcg/bpt,0x0023/0x0046)						
(bcg/bcw,0x0023/0x0047) Caller Waiting Tone (bcg/bcr, 0x0023/0x0048) Pay Tone (bcg/bpy, 0x0023/0x0049) Mandatory/ Optional Used in command: Used in command: None - - - Event Parameters Optional Values: - Provisioned Value: Parameters ObservedEvent Parameters Mandatory/ Optional Supported Values: Provisioned Value: Values: - Provisioned Value: Provisioned Value: Values: - Statistics Mandatory/ Optional Used in command: Values: - Supported Values: - None - - Error Codes Mandatory/ Optional	Call Waiting Tone						
None Statistics Mandatory/ Optional Provisioned Value:	(bcg/bcw,0x0023/0x0047)						
Close Company Compan	Caller Waiting Tone						
Pay Tone (bcg/bpy, 0x0023/0x0049) Events Mandatory/ Optional None Event Parameters ObservedEvent Parameters Optional Statistics Mandatory/ Optional Mone Statistics Mandatory/ Optional None Event Parameters ObservedEvent Parameters Optional Mandatory/ Optional Used in command: Supported Provisioned Value: Provisioned Value: Supported Values: Supported Values:							
None Statistics Mandatory/ Optional							
None Compand Compand							
None - Event Mandatory/ Supported Value: Parameters Optional Values:		Mandatory/		Used in	comman	d:	
Event Parameters Optional Values: Optional Values: ObservedEvent Parameters Optional Values: ObservedEvent Parameters Optional Values: Statistics Mandatory/ Optional Supported Values: Used in command: Supported Values: Supported Values: Used in command: Supported Values: Optional		Optional					
Parameters Optional Values:	None	-			-		
Company Comp		Event	Mandatory/	Suppo	rted	Provisioned Value:	
Parameters Optional Values:		Parameters	Optional	Value	es:		
Parameters Optional Values:		-	-	-		-	
Parameters Optional Values:		ObservedEvent	Mandatory/	Suppo	rted	Provisioned Value:	
Statistics Mandatory/ Used in command: Supported Values: Optional None		Parameters					
None		-	• -	-		-	
None	Statistics	Mandatory/	Used in comma	and:	Supported Values:		
None							
Error Codes Mandatory/ Optional	None	-	-			-	
, ,			Mandat	ory/ Optiona	ī		
None -	None			-			

A.14.13 Expanded Call Progress Tones Generator Package

Table A.14.13/1: 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 c	ommand:	Duration Provisioned Value:	
Comfort Tone	0	ADD, MO	D, MOVE	Value	
(xcg/cmft,0x0024/0x004a) Off-hook warning Tone	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:	
(xcg/roh, 0x0024/0x004b) 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 comma	nd:	
None	-		-		
	Event Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:	
	ObservedEvent Parameters	- Mandatory/ Optional	Supported Values:	Provisioned Value:	
Statistics	Mandatory/ Optional	Used in comma	and:	Supported Values:	
None		-		-	
Error Codes		Mandatory/ Optional			
None			-	·	

A.14.14 Basic Services Tones Generation Package

Table A.14.14/1: Package Usage Information For Basic Services Tones Generation Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:	
None	-	-	-	-	
Signals	Mandatory/ Optional	Used in o	command:	Duration Provisioned Value:	
Recall Dial Tone	0	ADD, MC	DD, MOVE	Value	
(srvtn/rdt,0x0025/0x004f) Confirmation Tone	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:	
(srvtn/conf,0x0025/0x0050) Held Tone (srvtn/ht,0x0025/0x0051) Message Waiting Tone (srvtn/mwt,0x0025/0x0052)	Tone Direction (btd, 0x0001)	М	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		-		

A.14.15 Bearer Control Tunnelling Package

Table A.14.15/1: Package Usage Information For Bearer Control Tunnelling Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:		
Tunneling Options (BT/TunOpt, 0x0022/0x01)	М	ADD, MOD	1 /2	Not Applicable		
Signals	Mandatory/ Optional	Used in c	ommand:	Duration Provisioned Value:		
Bearer Information	M	ADD,	MOD	Not Applicable		
Transport (BT/BIT, 0x0022/0x01)	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:		
	Bearer Information Tunnel (BIT,0x01)	M	Octet String	Not Applicable		
Events	Mandatory/ Optional	Used in command:				
Tunnel Indication	M		ADD, MOD, NOTI	FY		
(BT/TIND. 0x0022/0x01)	Event Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:		
·	Not applicable	-	-	-		
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:		
	Bearer Information transport (BIT,0x01)	М	Octet String	Not Applicable		
Statistics	Mandatory/ Optional	Used in comma	Supported Values:			
None	-	-		-		
Error Codes		Manda	tory/ Optional			
None			-			

A.14.16 Expanded Services Tones Generation Package

Table A.14.16/1: Package Usage Information For Expanded Services Tones Generation Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:
None	-	-	-	-
Signals	Mandatory/	Used in c	ommand:	Duration Provisioned
	Optional			Value:
Call Transfer Dial Tone	0	ADD, MO	D, MOVE	Value
(xsrvtn/xferdt,0x0026/0x0053)	Signal	Mandatory/	Supported	Duration Provisioned
Call Forward Tone	Parameters	Optional	Values:	Value:
(xsrvtn/cft,0x0026/0x0054) Credit Card service Tone (xsrvtn/ccst,0x0026/0x0055) Special Recall Dial Tone (xsrvtn/srdt,0x0026/0x0056)	Tone Direction (btd, 0x0001)	М	Internal / External	Default=External
Events	Mandatory/ Optional	Used in command:		
None	•	-		
	Event Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:
	-	-	-	-

	ObservedEvent	Mandatory/	Supp	orted	Provisioned Value:
	Parameters	Optional	Valu	ies:	
	-	-	-		-
Statistics	Mandatory/ Optional	Used in command:		S	upported Values:
None				-	
Error Codes	Mandatory/ Optional				
None	·				

A.14.17 Intrusion Tones Generation Package

Table A.14.17/1: Package Usage Information For Intrusion Tones Generation Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	d Provisioned Value:	
None	-	-	-	-	
Signals	Mandatory/ Optional	Used in o	command:	Duration Provisioned Value:	
Intrusion Pending Tone	0	ADD, MC	D, MOVE	Value	
(int/pend,0x0027/0x0057) Intrusion Tone	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:	
(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)	Tone Direction (btd, 0x0001)	М	Internal / Exte	ernal Default=External	
Events	Mandatory/ Optional		Used in cor	mmand:	
None	-		-		
	Event Parameters	Mandatory/ Optional	Supported Values:	d Provisioned Value:	
	ObservedEvent Parameters	- Mandatory/ Optional -	Supported Values:	d Provisioned Value:	
Statistics	Mandatory/ Optional	Used in comm	and:	Supported Values:	
None	-	-		-	
Error Codes	Mandatory/ Optional				
None			-		

A.14.18 3GUP Package

Table A.14.18/1: Package Usage Information For 3GUP Package

Properties	Mandatory/ Optional	Used in command:	Supporte	ed Values:	Provisioned Value:
UP Mode of operation (threegup/mode, 0x002f/0x0001)	М	ADD, MOD, MOVE		GPP TS .232	See 3GPP TS 29.232
UP versions (threegup/ upversions, 0x002f/0x0002)	М	ADD, MOD, MOVE		GPP TS .232	See 3GPP TS 29.232
Delivery of erroneous SDUs (threegup/ delerrsdu, 0x002f/0x0003)	М	ADD, MOD, MOVE		GPP TS .232	See 3GPP TS 29.232
Interface (threegup/ interface, 0x002f/0x0004)	М	ADD, MOD, MOVE		GPP TS .232	See 3GPP TS 29.232
Initialisation Direction (threegup/ initdir, 0x002f/0x0005)	М	ADD, MOD, MOVE		GPP TS .232	See 3GPP TS 29.232
Signals	Mandatory/ Optional	Used in c	ommand:		Duration Provisioned Value:
None	- Signal Parameters	Mandatory/ Optional		oorted ues:	- Duration Provisioned Value:
Events	Mandatory/ Optional		Used i	n command	:
None	Event Parameters	Mandatory/ Optional		oorted ues:	Provisioned Value:
	ObservedEvent Parameters	Mandatory/ Optional		oorted ues:	Provisioned Value:
Statistics	Mandatory/ Optional	Used in comma	Used in command:		upported Values:
None					
Error Codes		Manda	tory/ Option	nal	
None			-		

A.14.19 Modification of Link Characteristics Bearer Capability

Table A.14.19/1: Package Usage Information For Modification of Link Characteristics Package

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

Events	Mandatory/ Optional	Used in command:				
Bearer	M	ADD, MOD, NOTIFY				
Modification	Event	Mandatory/	Provisioned Value:			
Support Event.(Parameters	Optional	Values:			
threegmlc/	None	-	-	-		
mod_link_supp,	ObservedEvent	Mandatory/	Supported	Provisioned Value:		
0x0046/0x0001)	Parameters	Optional	Values:			
	None	-	-	-		
Statistics	Mandatory/ Optional	Used in command:		Supported Values:		
None	-			-		
Error Codes		Mandatory/ Optional				
None			-			

A.14.20 Hanging Termination Detection Package

Table A.14.20/1: Package Usage Information For Hanging Termination Detection Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:	
None	-	-	-	-	
Signals	Mandatory/ Optional	Used in c	ommand:	Duration Provisioned Value:	
None					
	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:	
Events	Mandatory/ Optional	Used in command:			
Termination	M	ADD, N	MOD, MOVE, AUDITVAL	LUE, NOTIFY	
Heartbeat	Event	Mandatory/	Supported	Provisioned Value:	
	Parameters	Optional	Values:		
	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				

A.14.21 TFO package

Table A.14.21/1: Package Usage Information For TFO

Properties	Mandatory/ Optional	Used in command:	Supported		Provisioned Value:
TFO Activity Control (threegtfoc /tfoenable, (0x0031/0x0001)	M	ADD, MOD, MOVE	See 3G 29.2		See 3GPP TS 29.232
TFO Codec List (threegtfoc / codeclist, (0x0031/0x0002)	M	ADD, MOD, MOVE	See 3G 29.2	_	See 3GPP TS 29.232
Signals	Mandatory/ Optional	Used in c	ommand:		Duration Provisioned Value:
None					
	Signal Parameters	Mandatory/ Optional	Suppo Valu		Duration Provisioned Value:
Events	Mandatory/ Optional		Used in	command	 :
Optimal Codec	0		ADD, MOD,	MOVE, NO	TIFY
Event	Event	Mandatory/	Suppo		Provisioned Value:
(threegtfoc /	Parameters	Optional	Valu	es:	
codec_modify,	None				
(0x0031/0x0010)	ObservedEvent	Mandatory/	Supported		Provisioned Value:
	Parameters	Optional	Values:		
	Optimal Codec	M	See 3G		See 3GPP TS 29.232
0 1 11 5	Туре		29.2		
Codec List Event	0		ADD, MOD,		
(threegtfoc /	Event	Mandatory/	Suppo Valu		Provisioned Value:
distant codec_list, (0x0031/0x0012)	Parameters	Optional	Valu	es:	
(000031/000012)	None ObservedEvent	Mandatand	Cumm	td	Provisioned Value:
	Parameters	Mandatory/ Optional	Suppo Valu		Provisioned value:
	Distant Codec List	M	See 3G		See 3GPP TS 29.232
	Distant Codec List	IVI	29.2		366 3011 13 29.232
TFO Status Event	0		ADD, MOD,	-)TIFY
(threegtfoc /	Event	Mandatory/	Suppo		Provisioned Value:
TFO_status)	Parameters	Optional	Valu		
(0x0031/0x0014)	None	•			
,	ObservedEvent	Mandatory/	Suppo	orted	Provisioned Value:
	Parameters	Optional	Valu	es:	
	TFO Status	M	See 3G		See 3GPP TS 29.232
Statistics	Mandatory/ Optional	Used in command: S		լ Supported Values։	
None					
Error Codes		Manda	tory/ Optiona	al	

A.14.22 Media Gateway Overload Control Package

Table A.14.22/1: Media Gateway Overload Control Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:	
None	_	_	_	_	
Signals	Mandatory/ Optional	Used in c	ommand:	Duration Provisioned Value:	
None	_	-	_	_	
	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:	
	_	_	_	_	
Events	Mandatory/ Optional	Used in command:			
MG_Overload	M		MOD, NOTIFY		
ocp/mg_overload	Event	Mandatory/	Supported	Provisioned Value:	
	Parameters	Optional	Values:		
	None	-	_	_	
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:	
	None	_	-	_	
Statistics	Mandatory/ Optional	Used in command:		Supported Values:	
None	_	_		_	
Error Codes	Mandatory/Optional				
None			=		

A.14.23 Inactivity Timer Package

Table A.14.23/1: Inactivity Timer Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:		
None	-	-	-	-		
Signals	Mandatory/ Optional	Used in c	ommand:	Duration Provisioned Value:		
None	•	•	•	-		
	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:		
	-	-	-	-		
Events	Mandatory/ Optional	Used in command:				
Inactivity Timeout,	M		MOD, NOTIFY			
it/ito	Event Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:		
	Maximum Inactivity Time, mit	M	Any integer	Unspecified		
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:		
	None		-	-		
Statistics	Mandatory/ Optional	Used in command: S		Supported Values:		
None	-	-		-		
Error Codes		Mandatory/ Optional				
None			=			

A.14.24 MGC Information Package

Table A.14.24/1: MGC Information Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:
Data Block, MGCInfo/db	М	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/	Supported	Duration Provisioned
		Optional	Values:	Value:
	-	-	-	-
Events	Mandatory/ Optional		Used in command	:
None	-		-	
	Event	Mandatory/	Supported	Provisioned Value:
	Parameters	Optional	Values:	
	_	-	-	-
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:
	-	-		-
Statistics	Mandatory/ Optional	Used in comma	nd: S	upported Values:
None	-	-		-
Error Codes		Manda	tory/ Optional	
None			-	

A.14.25 RTP Package

Table A.14.25/1: RTP Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:
None	-	-	-	-
Signals	Mandatory/ Optional	Used in cor	nmand:	Duration Provisioned Value:
None	-	•		-
	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:
	-	-	-	-
Events	Mandatory/ Optional	Used in command:		
Payload	-		NA	
Transition, rtp/pltrans	Event Parameters	Mandatory/Optional	Supported Values:	Provisioned Value:
	None	-	-	-
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values:	Provisioned Value:
	rtppayload, rtppltype	-	A valid encoding name	-

Statistics	Mandatory/ Optional	Used in command:	Supported Values:
Packets Sent, rtp/ps	M	SUBTRACT REPLY	ALL
Packets Received, rtp/pr	М	SUBTRACT REPLY	ALL
Packet Loss, rtp/pl	M	SUBTRACT REPLY	ALL
Jitter, rtp/jit	M	SUBTRACT REPLY	ALL
Delay, rtp/delay	M	SUBTRACT REPLY	ALL
Error Codes		Mandatory/ Optional	
None		-	

A.14.26 Tone Generator Package

Table A.14.26/1: Package Usage Information For Tone Generator Package

Properties	Mandatory/ Optional	Used in command:	Support Values:	ed	Provisioned Value:
None	-	-		-	-
Signals	Mandatory/	Used in command:			Duration Provisioned
	Optional				Value:
Play Tone	Not Used		-		-
(tonegen/pt,0x0003/0x0001)	Signal Parameters	Mandatory/	Suppor	ted	Duration
		Optional	Values:		Provisioned Value:
	-	-		-	-
Events	Mandatory/	Used in command:			
	Optional				
None	-			-	
	Event	Mandatory/	Support	ed	Provisioned Value:
	Parameters	Optional	Values:		
	-	-		-	-
	ObservedEvent	Mandatory/	Support	ed	Provisioned Value:
	Parameters	Optional	Values:		
	-	-		-	-
Statistics	Mandatory/	Used in command:		Supporte	ed Values:
	Optional				
None	-	-			-
Error Codes	Mandatory/ Optional	•			
None			-		

A.14.27 Tone Detection Package

Table C.14.27/1: Package Usage Information For Tone Detection Package

Properties	Mandatory/	Used in command:	Supported Values:	Provisioned Value:
	Optional			
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:		
Start tone	0		ADD, MOD, MOVE, N	OTIFY
detected (tonedet/std,	Event	Mandatory/	Supported	Provisioned Value:
0x0004/0x0001)	Parameters	Optional	Values:	
	Tone ID List (tl,0x0001)	M	wildcard	Not Applicable
	ObservedEvent	Mandatory/	Supported	Provisioned Value:
	Parameters	Optional	Values:	
	Tone ID (tid,0x0003)	M	Value	Not Applicable
Events	Mandatory/	Used in command:		
	Optional			
End Tone	М		ADD, MOD, MOVE, N	OTIFY
detected (tonedet/etd,	Event	Mandatory/	Supported	Provisioned Value:
0x0004/0x0002)	Parameters	Optional	Values:	
	Tone ID List (tl,0x0001)	M	wildcard	Not Applicable
	ObservedEvent	Mandatory/	Supported	Provisioned Value:
	Parameters	Optional	Values:	
	Tone ID (tid,0x0003)	М	Value	Not Applicable
	Duration (dur,0x0002)	0	Value	Not Applicable
Events	Mandatory/	Used in command:		1
	Optional			
Long Tone	Not Used		-	

detected (tonedet/ltd,	Event	Mandatory/	Supported	t	Provisioned Value:
0x0004/0x0003)	Parameters	Optional	Values:		
	-	-		-	-
	ObservedEvent	Mandatory/	Supported	t	Provisioned Value:
	Parameters	Optional	Values:		
	-	-		-	-
Statistics	Mandatory/ Optional	Used in command:		Supported '	Values:
None	-	-			-
Error Codes	Mandatory/ Optional				
None			-		

A.14.28 H324 Package

Table A.14.28/1: Package Usage Information For H324 Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:
Communication mode	Not used	-	-	-
(h324/cmod,0x002c/0x0001)				
Highest Multiplexing Level (h324/muxlv,0x002c/0x0002)	Not Used	-	-	Based on capability of IM-MGW
Demultiplex (h324/demux,0x002c/0x0003)	Not used	-	-	-
Remote H.223 capability (h324/h223capr,0x002c/0x0004)	М	MOD	OCTET STRING	Not Applicable
Incoming Multiplex Table (h324/muxtbl_in,0x002c/0x0005)	М	MOD	OCTET STRING	Not Applicable
Outgoing Multiplex Table (h324/muxtbl_out,0x002c/0x0006)	М	MOD	OCTET STRING	Not Applicable
Signals	Mandatory/ Optional	Used in o	command:	Duration Provisioned Value:
None	-		-	-
	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:
	-	-	-	-
Events	Mandatory/ Optional		Used in comman	d:
	Optional			
None	-		-	
None	- Event	Mandatory/	- Supported	Provisioned Value:
None	-	Mandatory/ Optional	Supported Values:	Provisioned Value:
None	Event Parameters	Optional -	Values:	-
None	Event Parameters - ObservedEvent	Optional - Mandatory/	Values: - Supported	Provisioned Value: - Provisioned Value:
None	Event Parameters	Optional -	Values:	-

Statistics	Mandatory/ Optional	Used in command:	Supported Values:
MUXPDU sent (h324/muxsent,0x002c/0x0001)	Not used	-	-
MUXPDU received (h324/muxrec,0x002c/0x0002)	Not used	-	-
MUXPDU error (h324/muxerr,0x002c/0x0003)	Not used	-	-
Error Codes		Mandatory/ Option	nal
None		-	

A.14.29 H.245 Transport Package

Table A.14.29/1: Package Usage Information For H.245 Transport Package

Properties	Mandatory/ Optional	Used in command:		ported lues:	Provisioned Value:
None	-	-		-	-
Signals	Mandatory/ Optional	Used in	command:		Duration Provisioned Value:
Outgoing H.245 Message	M	M	IOD		-
(h245tp/h245msgout, 0x00b4/0x0001)	Signal Parameters	Mandatory/ Optional		ported lues:	Duration Provisioned Value:
	Contents of H.245 message (h245mc,0x0001)	М	OCTET	STRING	-
Events	Mandatory/		Used i	n comman	d:
	Optional				
Incoming H.245 message	M	ADD, NOTIFY			
(h245tp/h245msgin, 0x00b4/0x0001)	Event	Mandatory/	Sup	ported	Provisioned Value:
	Parameters	Optional	Va	lues:	
	None	-		-	-
	ObservedEvent	Mandatory/	Sup	ported	Provisioned Value:
	Parameters	Optional	Va	lues:	
	Contents of H.245 message (h245mc,0x0001)	М	OCTET	STRING	Not Applicable
Statistics	Mandatory/	Used in comm	nand:	Sı	upported Values:
	Optional				
None	-	-			-
Error Codes		Mandat	ory/ Optio	nal	
None			-		

A.14.30 IP domain connection

Table C.14.30: Package usage information for IP domain connection package

Properties	Mandatory/	Used in command:	Supported Values:	Provisioned Value:
	Optional			
IP Realm Identifier	M	ADD	String	Operator Defined (NOTE1)
(ipdc /realm, 0x009d /0x0001)				
Signals	Mandatory/	Used in command:		Duration Provisioned Value:
	Optional			value.
None	-		-	-
	Signal Parameters	Mandatory/	Supported Values:	Duration
		Optional		Provisioned Value:
	-	-	-	-
Events	Mandatory/	Used in command:		
	Optional			
None	-		-	
	Event	Mandatory/	Supported	Provisioned Value:
	Parameters	Optional	Values:	
	-	-	-	-
	ObservedEvent	Mandatory/	Supported	Provisioned Value:
	Parameters	Optional	Values:	
	-	-	-	-
Statistics	Mandatory/	Used in command:	Suppor	ted Values:
	Optional			
None	-	-		-
Error Codes	Mandatory/ Optional		,	
None			-	
		ured such that if the MG s then the default IP rea		he IP realm identifier and the

A.14.31 H.245 Transport Package for SPC use

Table A.14.31/1: Package Usage Information For H.245 Transport Package for SPC use

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:
None	-	-	-	-
Signals	Mandatory/ Optional	Used in c	ommand:	Duration Provisioned Value:

None (NOTE 1)	M	M	IOD	-	
	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:	
	Signalling Preconfigured Channel (spc, 0x0002)	0	ON OFF	OFF	
	Repetition (rep, 0x0003)	0	ON OFF	ON	
Events	Mandatory/		Used in commar	nd:	
	Optional				
None (NOTE 2)	M	ADD, NOTIFY			
	Event	Mandatory/	Supported	Provisioned Value	
	Parameters	Optional	Values:		
	Signalling Preconfigured Channel (spc, 0x0001)	0	H245, SPC, Both	H245	
	ObservedEvent	Mandatory/	Supported	Provisioned Value	
	Parameters	Optional	Values:		
	Signalling Preconfigured Channel (spc, 0x0002)	0	ON OFF	OFF	
		Used in command: Supported		Supported Values:	
Statistics	Mandatory/	usea in comn	ialiu.	apported values.	
Statistics	Mandatory/ Optional	Osea in comm	ianu.	napporteu values.	
Statistics None	_	used in comm	ialiu.	-	
	_	-	ory/ Optional	-	

NOTE 1: The package does not define any new signal. The defined signal parameter can be used in the Outgoing H.245 Message signal (h245tpspc/h245msgout, 0x00f7/0x0001) defined in the base package (H.245 Transport package).

NOTE 2: The package does not define any new event. The defined event and observed event parameters can be used in the Incoming H.245 Message event (h245tpspc/h245msgin, 0x00f7/0x0001) defined in the base package (H.245 Transport package).

A.14.32 MONA preference package

Table A.14.32/1: Package Usage Information for MONA preference Package

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:
MONA Class (monapref/class, 0x00f8/0x0001)	Not used	-	-	-

Supported Media Preconfigured Channels Receive (monapref/mpcrx, 0x00f8/0x0002)	Not used	-	-	-
Supported Media Preconfigured Channels Transmit (monapref/mpctx, 0x00f8/0x0003)	Not used			-
Signals	Mandatory/	Used in command:	•	Duration Provisioned
	Optional			Value:
Outgoing MONA preference	M	MC	DD	-
message (monapref/monaprefmsgout, 0x00f8/0x0001)	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration Provisioned Value:
	Contents of MONA preference message (prefmsgc,0x0001)	М	OCTET STRING	-
Forward Media in Preconfigured	0	MC	DD	-
Channel (monapref/Preconfchannelmedia,	Signal Parameters	Mandatory/ Optional	Supported Values:	Duration
0x00f8/0x0002)				Provisioned Value:
	Mux Code (muxcode,0x0003)	М	sub-list of OCTET STRING	-
Events	Mandatory/	Used in command:		
	Optional			
MONA Preference reception	M		ADD, NOTIFY	
(monapref/monaprefmsgin, 0x00f8/0x0001)	Event	Mandatory/	Supported	Provisioned Value:
,	Parameters	Optional	Values:	
	None	-	-	-
	ObservedEvent	Mandatory/	Supported	Provisioned Value:
	Parameters	Optional	Values:	
	Contents of MONA preference message (prefmsgc,0x0001)	М	OCTET STRING	Not Applicable
MONA Preference negotiation	M		ADD, NOTIFY	
completed (monapref/monaprefcompl,	Event	Mandatory/	Supported	Provisioned Value:
0x00f8/0x0002)	Parameters	Optional	Values:	
	None	-	-	-
	ObservedEvent	Mandatory/	Supported	Provisioned Value:
	Parameters	Optional	Values:	
	None	-	-	-
Legacy Detected	M		ADD, NOTIFY	
(monapref/legdet,	Event	Mandatory/	Supported	Provisioned Value:
0x00f8/0x0003)	Parameters	Optional	Values:	TOTAL STITUTE VALUE
	None	_	_	_
	INOTIE	_	_	-

	ObservedEvent	Mandatory/	Support	ed	Provisioned Value:
	Parameters	Optional	Values:		
	None	-		-	-
MPC reception	0		L ADD	, NOTIFY	
(monapref/mpcrec, 0x00f8/0x0004)	Event	Mandatory/	Support	ed	Provisioned Value:
0,0010,00001)	Parameters	Optional	Values:		
	None	-		-	-
	ObservedEvent	Mandatory/	Support	ed	Provisioned Value:
	Parameters	Optional	Values:		
	Mux Code (muxcode,0x0001)	М	OCTET	STRING	Not Applicable
Statistics	Mandatory/	Used in command:		Supporte	d Values:
	Optional				
None	-	-			-
Error Codes	Mandatory/ Optional				
None			-		

A.14.33 3G Interface Type package

Table A.14.31/1: Package Usage Information For 3G Interface Type

Properties	Mandatory/ Optional	Used in command:	Supported Values:	Provisioned Value:		
IP Interface Type (threegint /ipint, (0x00e3/0x0001)	M	ADD, MOD	"NboIP" (0x0001) "MboIP" (0x0003)	None		
Signals	Mandatory/ Optional	Used in c	ommand:	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:		upported Values:		
None	-	-		-		
Error Codes		Mandatory/ Optional				
None			•			

A.14.34 RTCP Feedback Message package

Table A.14.34/1: Package Usage Information for RTCP Feedback Message package

Properties	Mandatory/ Optional	Used in command:		ported lues:	Provisioned Value:
None	-	=		-	-
Signals	Mandatory/	Used in	command:		Duration Provisioned
	Optional				Value:
Feedback Message	M	N	/IOD		-
Sending (rtcpfb/fbmesssend,	Signal Parameters	Mandatory/ Optional		ported lues:	Duration Provisioned Value:
0x00f6/0x0001)	Update Picture (upic,0x0001)	0	Enum	neration	-
	Max Bitrate (mbr,0x0002)	0	Unsigne	ed Integer	-
Events	Mandatory/ Optional	Used in command:			d:
RTCP Feedback Message	M		MOI	D, NOTIFY	
Detection (rtcpfb/det,	Event	Mandatory/	Sup	ported	Provisioned Value:
0x00f6/0x0001)	Parameters	Optional	Val	lues:	
	Feedback	M	Sub-list	t of String	-
	Message Type (type,0x0001)				
	ObservedEvent Parameters	Mandatory/ Optional		ported lues:	Provisioned Value:
	Update Picture (upic,0x0001)	0	Enum	neration	-
	Max Bitrate (mbr,0x0002)	0	Unsigned Integer		-
Statistics	Mandatory/ Optional	Used in command: Su		upported Values:	
None		-			
Error Codes	Mandatory/ Optional				
None		-			

A.15 Mandatory support of SDP and H.248 Annex C information elements

Table A.15/1: Supported Annex C and SDP information elements

Information Element	Annex C Support	SDP Support
v-line	"SDP_V"	The value must always be equal to zero: v=0.
m-line	"SDP_M "	<port> <transport> and <fmt-list> are required. Both static and dynamic payload types shall be supported. The MGC may underspecify the <fmt-list> subfield in place of a single dynamic payload type. In this case the mapping between the underspecified payload type and the <encoding name="">/<clock rate=""> shall be provided in the rtpmap attribute.</clock></encoding></fmt-list></fmt-list></transport></port>
c-line	"SDP_C "	<nettype> <addrtype> and <connection address=""> are required The network type shall be set to "IN". The address type may be IPv4 or IPv6. The MGC may apply parameter underspecification to the <address type=""> subfield. (NOTE 2)</address></connection></addrtype></nettype>
a-line	"SDP_A "	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). See Clause 10.2.
b-line	"SDP_B "	(NOTE1). B:RS and b:RR bandwidth modifiers required Bandwidth information shall be supplied by the MGC if the required bandwidth cannot be immediately derived from the information contained in the m= line. If the MGC is using parameter underspecification, the MG shall assume a reasonable default bandwidth value for well-known codecs and shall provide this value in the response sent to the MGC. The Modifier field shall be set to "AS". The Bandwidth Value field shall be set to the maximum bandwidth requirement of the media stream in kbit/s and shall take into account all headers down to the IP layer. The MGC may also supply additional RTCP bandwidth modifiers (i.e. RR and RS, see IETF RFC 3556 [39]). If the RTCP modifiers are not supplied, the bandwidth value for the AS modifier shall take into account an extra 5% bandwidth for RTCP packets.
o-line	"SDP_O"	The origin line consists of 6 fields: o= <user name=""> <session id=""> <version> <network type=""> <address type=""> shall be set to IN type 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 MG is connected <address> should contain the fully qualified domain name or IP address of the gateway.</address></address></address></address></address></address></address></address></address></address></address></address></address></address></address></address></address></address></address></address></network></version></session></user>

s-line	"SDP_S"	The session name (s=) line contains a single field: s= <session-name>. The MGC 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.</session-name>
		The MG shall return the value received from the MGC or if there is no s-line sent by the MGC, the MG shall populate this line as follows: - "s=-"
t-line	"SDP_T"	The time (t=) line consists of two fields: t= <start-time> <stop-time>.</stop-time></start-time>
		The MGC is not required to supply a time description but shall accept one.
		The MG shall return the value received from the MGC or if there is no t-line sent by the MGC, the MG shall populate this line as follows: - "t=0 0"
NOTE b: For BICC termi with the subclar Recommendati X.213 [33] shall The BIR length	nations, mandatory su use "Mandatory Suppo on Q.1950 [14]. For IF I be used. For Ipv4 ne shall be fixed at 4 Oct	ed for terminations towards the IM CN Subsystem. Apport of SDP and Annex C information elements shall be in accordance or of SDP and H.248.1 annex C information elements" in ITU-T The IANA ICP IDI format of the NSAP addressing format as specified in tworks the IPv4 format recommended by X.213 shall be adopted. Test and the NSAP length shall be fixed at 20 Octets
NOTE 2: The address tyl H.248 MG. The	MGC may apply H.24	6. The default IP version (i.e. IPv4 or IPv6) may be provisioned in the 18 parameter underspecification. If the MGC does require a different IP

A.16 Optional support of SDP and H.248 Annex C information elements

Table A.16/1: Optional Supported Annex C and SDP information elements

version than the provisioned default, then the MGC applies complete H.248 parameter specification.

Information Element	Annex C Support	SDP Support

A.17 Procedures

A.17.1 Call Independent Procedures

Table A.17.1/1 shows the relationship between each non call-related procedure in 3GPP TS 29.232 [5] and the corresponding procedure defined in 3GPP TS 29.163 [4].

For further description of error codes and service change reasons, refer to ITU-T Recommendation H.248.8 [14].

Table A.17.1/1: Non call-related transaction reused from 3GPP TS 29.232 [5]

Procedure defined in 3GPP TS 29.163 [4]			Comment
IM-MGW Out of service	MGW Out of Service	Mandatory	
IM-MGW Communication Up	MGW Communication Up	Mandatory	
IM-MGW Restoration	MGW Restoration	Mandatory	
IM-MGW Register	MGW Register	Mandatory	
IM-MGW Re-register	MGW Re-register	Mandatory	
MGCF Ordered Re-register	(G)MSC Server Ordered Re-register	Mandatory	
MGCF Restoration	(G)MSC Server Restoration	Optional	
MGCF Out of Service	(G)MSC Server Out of Service	Optional	
Termination Out-of-Service	Termination Out-of-Service	Mandatory	
Termination Restoration	Termination Restoration	Mandatory	
Audit Value	Audit Value	Mandatory	Mandatory support only for audit of Termination Service State and for periodic audit of MGW (empty Audit descriptor). Optional support for audit of Packages or to retrieve MGC Information.
Audit Capability	Audit Capability	Optional	
Command Rejected	Command Rejected	Mandatory	The "Command Rejected" procedure may be used in response both to call-related and non-call-related ITU-T Recommendation H.248 Commands
IM-MGW Capability Change	Capability Update	Optional	
IM-MGW Resource Congestion Handling - Activate	MGW Resource Congestion Handling - Activate	Mandatory	
IM-MGW Resource Congestion Handling - Indication	MGW Resource Congestion Handling - Indication	Mandatory	
Inactivity Timeout - Activate	Inactivity Timeout - Activate	Optional	
Inactivity Timeout - Indication	Inactivity Timeout - Indication	Optional	

A.17.1.2 Profile registration

The following description is based on H.248.1 profile registration procedure with some clarifications. The reply to the ServiceChange Request containing the SCP parameter indicates if the MGCF supports the requested profile or if it does not support it and wants to propose an alternative profile. The profile (name and version) is only returned in the reply if the MGCF cannot support the specified profile in the ServiceChangeRequest. The returned reply shall indicate the profile and version supported. Upon reception of a profile in the reply, if the IM-MGW supports the indicated profile, it shall issue a new ServiceChange Request with the agreed profile to explicitly confirm the acceptance of the profile to the MGCF; otherwise, if the IM-MGW does not support the indicated profile, it may continue the registration or reregistration procedure by issuing a new ServiceChange Request with an alternative profile; until such procedure is successfully completed the IM-MGW shall remain out of service. If the profile is not returned the MGCF shall use the capabilities specified by the Profile indicated in the service change request.

NOTE: It should be observed that the profile registration is not a "cold calling" negotiation; it is expected that the operator will have configured the network to support certain profiles and so the profile registration within the Mn interface permits network upgrade scenarios but otherwise is simply a means to confirm the connection of the profile to be used over the Mn interface between MGCF and IM-MGW.

A.17.2 IMS Terminations Procedures

A.17.2.1 Summary of Procedures related to a termination towards IM CN Subsystem

Table 1 shows the relationship between each call-related procedure in ITU-T Recommendation Q.1950 [14] (see 3GPP TS 29.205 [3]) or TS 29.232 [5] and the corresponding stage 2 procedure defined in 3GPP TS 29.163 [4].

Table A.17.2.1/1: Correspondence between ITU-T Recommendation Q.1950 [13] or 29.232 [5] call-related transactions and 3GPP TS 29.163 [4] procedures

Procedure defined in 3GPP TS 29.163 [4]	Transaction used in Q.1950 [14]	Transaction used in TS 29.232 [5]	Supported	Comment
Reserve IMS Connection point	Not defined	Not Defined	Mandatory	See A.17.2. 2
Configure IMS Resources	Not Defined	Not Defined	Mandatory	See A.17.2. 3
Reserve IMS Connection Point and configure remote resources	Not defined	Not Defined	Mandatory	See A.17.2. 4
Release IMS termination	n. a. for reuse	Release Termination	Mandatory	See A.17.2. 5
Change IMS ThroughConnection	n.a. for re-use	Change Through Connection	Mandatory	only the Explicit (MGC Controlled Cut- Through) procedure is supported
Detect IMS RTP Tel Event	n.a. for re-use	Detect DTMF	Optional	Only applicable if termination towards IMS is connected with a termination towards a BICC network.
End IMS RTP Tel Event	n.a. for re-use	Stop Detect DTMF	Optional	Only applicable if termination towards IMS is connected with a termination towards a BICC network.
Notify IMS RTP Tel Event	n.a. for re-use	Report DTMF	Optional	Only applicable if termination towards IMS is connected with a termination towards a BICC network.
Send IMS RTP Tel Event	n.a. for reuse	Send DTMF	FFS	
Stop IMS RTP Tel Event	n.a.for reuse	Stop DTMF	FFS	
IMS Send Tone	n,a. for re-use	Send Tone	Optional	
IMS Stop Tone	n,a. for re-use	Stop Tone	Optional	
IMS Tone Completed	n,a. for re-use	Tone Completed	Optional	
Termination heartbeat Indication	Not defined	Termination hearbeat Indication	Mandatory	To allow detection of hanging contexts and terminations in the MGW that may result e.g. from a loss of communication between the MGCF and the IM-MGW.
IMS Bearer Released	n.a for re-use.	Bearer Released	Mandatory	
Request RTCP-Interworking	Not defined	Not defined	Optional	Only applicable if RTCP AVPF message to feedback on the quality of the media distribution from the IMS side is required to be interworked with corresponding H.245 message towards the CS side.
Notify of RTCP-Interworking	Not defined	Not defined	Optional	Only applicable if RTCP AVPF message to feedback on the quality of the media distribution from the IMS side is required to be interworked with corresponding H.245 message towards the CS side.
Signal H.245-Interworking	Not defined	Not defined	Optional	Only applicable if H.245 message to feedback on the quality of the media distribution from the CS side is required to be interworked with corresponding RTCP AVPF messag

			towards the IMS side.
NOTE 1:			re in the same table. This means that be combined in the same H.248

A.17.2.2 Reserve IMS Connection Point

When the procedure "Reserve IMS Connection Point" is required the following procedure is initiated:

The MGCF sends an Add.req command with the following information.

1 Add.req (Reserve IMS Connection Point) MGCF to IM-MGW

Table A.17.2.2/1: Reserve IMS Connection Point Request

Address Information	Control information	Bearer information
Stream ID	Transaction ID = z	Stream ID
Local Descriptor {	Termination ID = ?	Local Descriptor {
Port = ?	If Context Requested:	Codec List
IP Address = ?	Context ID = ?	RTP Payloads
}	If Context Provided:	RtcpbwRS
	Context ID = c1	RtcpbwRR
	If IP Interface Type:	}
	IP interface = "IP interface type"	
	If Resources for multiple Codecs	
	shall be reserved:	
	Reserve_Value	
	NotificationRequested (Event ID = x ,	
	"termination heartbeat")	
	If indication on Bearer Released	
	requested:	
	NotificationRequested (Event ID = x ,	
	"BNC Release (Cause)") – as	
	defined in ITU-T	
	Recommendation Q.1950	
	If multiple IP realms: IP realm	
	Identifier = required IP realm	
	identifier	

When the processing of command (1) is complete, the IM-MGW initiates the following procedure.

2 Add.resp (Reserve IMS Connection Point Ack)

Table A.17.2.2/2: Reserve IMS Connection Point Acknowledge

Address Information	Control information	Bearer information
Stream ID	Transaction ID	Stream ID
Local Descriptor {	Termination ID	Local Descriptor {
Port	Context ID	Codec List
IP Address		RTP Payloads
}		RtcpbwRS
		RtcpbwRR
		}

A.17.2.3 Configure IMS Resources

When the procedure "Configure IMS Resources" is required the following procedure is initiated:

The MGCF sends an Mod.req command with the following information.

1 Mod.req (Configure IMS Resources) MGCF to IM-MGW

Table A.17.2.3/1: Configure IMS Resources Request

Address Information	Control information	Bearer information
If local resources are modified:	Transaction ID	If local resources are modified:
Stream ID	Termination ID	Stream ID
Local Descriptor {	Context ID	Local Descriptor {
Port	If IP Interface Type:	Codec List
IP Address	IP interface = "IP interface	RTP Payloads
}	type"(NOTE)	RtcpbwRS
If remote resources are modified:	If Resources for multiple Codecs	RtcpbwRR
Remote Descriptor {	shall be reserved:	}
Port	Reserve_Value	If remote resources are modified:
IP Address		Remote Descriptor {
}		Codec List
		RTP Payloads
		RtcpbwRS
		RtcpbwRR
		}
NOTE: If this property is included within the "Reserve IMS Connection Point" procedure or the "Reserve IMS		
Connection Point and configure remote resource" procedure then it shall not be modified by this		
procedure.		

When the processing of command (1) is complete, the IM-MGW initiates the following procedure.

2 Mod.resp (Configure IMS Resources Ack)

Table A.17.2.3/2: Configure IMS Resources Acknowledge

Address Information	Control information	Bearer information
If local resources were provided in	Transaction ID	If local resources were provided in
request:	Context ID	request:
Stream ID	Termination ID	Stream ID
Local Descriptor {		Local Descriptor {
Port		Codec List
IP Address		RTP Payloads
}		RtcpbwRS
If remote resources were provided in		RtcpbwRR
request:		}
Remote Descriptor {		If remote resources were provided in
Port		request:
IP Address		Remote Descriptor {
}		Codec List
		RTP Payloads
		RtcpbwRS
		RtcpbwRR
		}

A.17.2.4 Reserve IMS Connection Point and configure remote resources

When the procedure "Reserve IMS Connection Point and configure remote resources" is required the following procedure is initiated:

The MGCF sends a Add.req command with the following information.

1 Add.req (Reserve IMS Connection Point and configure remote resources) MGCF to IM-MGW

Table A.17.2.4/1: Reserve IMS Connection Point and configure remote resources Request

Address Information	Control information	Bearer information
Stream ID	Transaction ID	Stream ID
Local Descriptor {	Termination ID = ?	Local Descriptor {
Port = ?	If Context Requested:	Codec List
IP Address = ?	Context ID = ?	RTP Payloads
}	If Context Provided:	RtcpbwRS
Remote Descriptor {	Context ID = c1	RtcpbwRR
Port	If IP Interface Type:	}
IP Address	IP interface = "IP interface type"	Remote Descriptor {
}	If Resources for multiple Codecs	Codec List
	shall be reserved:	RTP Payloads
	Reserve_Value	RtcpbwRS
	NotificationRequested (Event ID = x ,	RtcpbwRR
	"termination heartbeat")	}
	If indication on Bearer Released	
	requested:	
	NotificationRequested (Event ID = x ,	
	"BNC Release (Cause)") – as	
	defined in ITU-T	
	Recommendation Q.1950	
	If multiple IP realms: IP realm	
	Identifier = required IP realm	
	identifier	

When the processing of command (1) is complete, the IM-MGW initiates the following procedure.

2 Add.resp (Reserve IMS Connection Point and configure remote resources Ack)

Table A.17.2.4/2: Reserve IMS Connection Point and configure remote resources Acknowledge

Address Information	Control information	Bearer information
Stream ID	Transaction ID	Stream ID
Local Descriptor {	Termination ID	Local Descriptor {
Port	Context ID	Codec List
IP Address		RTP Payloads
}		RtcpbwRS
Remote Descriptor {		RtcpbwRR
Port		}
IP Address		Remote Descriptor {
}		Codec List
		RTP Payloads
		RtcpbwRS
		RtcpbwRR
		}

A.17.2.5 VOID

A.17.2.6 Termination heartbeat indication

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

Table A.17.2.6/1: NOT.req (Termination heartbeat) MGW to MGC

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = bearer1	
	Front ID (Front ID	
	Event_ID (Event ID = x, "termination heartbeat")	

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

Table A.17.2.6/2: NOT.resp (Termination heartbeat) MGC to MGW

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = bearer1	

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

The MGCF is in charge of correcting any detected mismatch, by substracting hanging terminations or clearing hanging contexts as specified for the hanging termination detection procedure in 3GPP TS 29.163 [4].

A.17.2.7 Request RTCP-Interworking

When the procedure "Request RTCP-Interworking" is required the following procedure is initiated:

the MGCF sends a Mod.req command with the following information.

Table A.17.2.7/1: Request RTCP-Interworking Request

Address Information	Control information	Bearer information
	Transaction ID = z Context ID = c1 Termination ID = bearer1	
	NotificationRequested (Event ID = x, "Incoming RTCP Interworking (RTCP Filter)")	

When the processing of command is complete, the IM-MGW initiates the following procedure.

Table A.17.2.7/2: Request RTCP-Interworking Acknowledge

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = bearer1	

A.17.2.8 Notify RTCP-Interworking

When the procedure "Notify RTCP-Interworking" is required the following procedure is initiated:

the IM-MGW sends a NOT.req command with the following information.

Table A.17.2.8/1: Notify RTCP-Interworking Request

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = bearer1	
	if RTCP PLI message received and the interworking required: Update Picture = UpdatePicture_Event	
	if RTCP TMMBR message received and the interworking required: Max BitRate = MaxBitRate Event	

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

Table A.17.2.8/2: Notify RTCP-Interworking Acknowledge

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = bearer1	

The MGCF is in charge of sending the corresponding H.245 message to the CS side to request for the media adaption. as specified for the "Interworking between RTCP messages and H.245 messages" in 3GPP TS 29.163 [4].

A.17.2.9 Signal H.245-Interworking

When the procedure "Signal H.245-Interworking" is required the following procedure is initiated:

the MGCF sends a Mod.req command with the following information.

Table A.17.2.9/1: Signal H.245-Interworking Request

Address Information	Control information	Bearer information
	Transaction ID = z Context ID = c1 Termination ID = bearer1	
	if H.245 VideoFastUpdatePicture message received and the interworking required: Interwork H.245-RTCP (UpdatePicture_Signal)	
	if H.245 Flow Control Command received and the interworking required: Interwork H.245-RTCP (MaxBitRate_Signal)	

When the processing of command is complete, the IM-MGW initiates the following procedure.

Table A.17.2.9/2: Signal H.245-Interworking Acknowledge

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = bearer1	

The IM-MGW is in charge of constructing and sending the corresponding RTCP message to the IMS side to request for the media adaption as specified for the "Interworking between RTCP messages and H.245 messages" in 3GPP TS 29.163 [4].

A.17.3 TDM Terminations Procedures

A.17.3.1 Summary Procedures related to a termination towards ISUP

Table A.17.3.1/1: Correspondence between ITU-T Recommendation Q.1950 [13] or 29.232 [5] callrelated transactions and 3GPP TS 29.163 [4] procedures related to a termination towards an ISUP network

Procedure defined in 3GPP TS 29.163 [4]	Transaction used in ITU-T Q.1950 [14]	Transaction used in TS 29.232 [5]	Support	Comment
Reserve TDM Circuit	n. a. for reuse	n. a. for reuse, (NOTE2)	Optional (NOTE 4)	See Clause A.17.3.2
Change TDM Through- connection	n. a. for reuse	Change Through- connection	Optional (NOTE 4)	only the Explicit (MGC Controlled Cut-Through) procedure is supported
Activate TDM voice- processing function	n. a. for reuse	Activate Voice Processing Function	Optional (NOTE 4)	
Send TDM Tone	n,a. for re-use	Send Tone	Optional (NOTE 4)	
Stop TDM Tone	n,a. for re-use	Stop Tone	Optional (NOTE 4)	
Play TDM Announcement	n. a. for reuse	Play Announcement	Optional (NOTE 4)	
TDM Announcement Completed	n. a. for reuse	Announcement Completed	Optional (NOTE 4)	
Stop TDM Announcement	n. a. for reuse	Stop Announcement	Optional (NOTE 4)	
Continuity Check	Continuity Check Tone	n. a. for reuse	Optional (NOTE 4)	The addition to "Prepare BNC Notify" defined in Annex B.7.1.1 of Q.1950 [10] shall be applied instead to "Reserve TDM Circuit", as defined in Clause A.17.3.2
Continuity Check Verify	Continuity Check Verify	Continuity Check Verify	Optional (NOTE 4)	
Continuity Check Response	Continuity Check Response	n. a. for reuse	Optional (NOTE 4)	The addition to "Prepare BNC Notify" defined in Annex B.7.1.2 of Q.1950 [10] shall be applied instead to "Reserve TDM Circuit", as defined in Clause A.17.3.2
Release TDM Termination	n. a. for reuse	n. a. for reuse	Optional (NOTE 4)	See Clause A.17.3.3
Termination heartbeat Event	Not defined	Termination heartbeat Indication	Optional	See Clause A.17.3.4
Not defined	Not defined	TFO Activation	Optional	See Clause A.14.21
Not defined	Not defined	Codec Modify	Optional	See Clause A.14.21
Not defined	Not defined	Optimal Codec and Distant List_Notify	Optional	See Clause A.14.21
Not defined	Not defined	Distant Codec List	Optional	See Clause A.14.21
Not defined	Not defined	TFO status Notify	Optional	See Clause A.14.21
Not defined	Not defined	TFO status	Optional	See Clause A.14.21
Bearer Released	n.a. for re-use.	Bearer Released	Optional (NOTE 4)	

NOTE 1: A procedure defined in table 13.2.2 can be combined with another procedure in the same 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.

NOTE 3: VOID

NOTE 4: Required for TDM terminations towards an ISUP based network

NOTE 2: The reserve circuit procedure of 29.232 is not to be used only a reduced set of the parameters is required for reserve TDM circuit.

A.17.3.2 Reserve TDM Circuit

When the procedure "Reserve TDM Circuit" is required the following procedure is initiated:

The MGCF sends an Add.req command with the following information.

Table A.17.3.2/1: Add.req (Reserve TDM Circuit) MGCF to IM-MGW

Address Information	Control information	Bearer information
	Transaction ID	Bearer Service Characteristics
	Termination ID	
	If Context Requested:	
	Context ID = ?	
	If Context Provided:	
	Context ID = c1	
	If detection of hanging termination is	
	requested:	
	NotificationRequested (Event ID = x ,	
	"termination heartbeat")	
	If indication on Bearer Released	
	requested:	
	NotificationRequested (Event ID = x ,	
	"BNC Release (Cause)") – as	
	defined in ITU-T	
	Recommendation Q.1950	

When the processing of command (1) is complete, the IM-MGW initiates the following procedure.

Table A.17.3.2/2: Add.resp (Reserve TDM Circuit) IM-MGW to MGCF

Address Information	Control information	Bearer information
	Transaction ID	
	Termination ID	
	Context ID	

A.17.3.3 Release TDM Termination

When the procedure "Release TDM Termination" is required the following procedure is initiated:

The MGCF sends an Sub.req command with the following information.

Table A.17.3.3/1: Sub.req (Release TDM Termination) MGCF to IM-MGW

Address Information	Control information	Bearer information
	Transaction ID	
	Termination ID	
	Context ID	

When the processing of command (1) is complete, the IM-MGW initiates the following procedure.

Table A.17.3.3/2: Sub.resp (Release TDM Termination) IM-MGW to MGCF

Address Information	Control information	Bearer information
	Transaction ID	
	Termination ID	
	Context ID	

A.17.3.4 Termination heartbeat indication

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

Table A.17.3.4/1: NOT.req (Termination heartbeat) MGW to MGC

Address Information	Control information	Bearer information
	Transaction ID = z Context ID = c1 Termination ID = bearer1	
	Event_ID (Event ID = x, "termination heartbeat")	

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

Table A.17.3.4/2: NOT.resp (Termination heartbeat) MGC to MGW

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = bearer1	

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

The MGCF is in charge of correcting any detected mismatch, by substracting hanging terminations or clearing hanging contexts as specified for the hanging termination detection procedure in 3GPP TS 29.163 [4].

A.17.4 BICC Terminations Procedures

A.17.4.1 Procedures related to a termination towards BICC

Table A.17.4.1/1: Correspondence between ITU-T Recommendation Q.1950 [13] or 3GPP TS 29.232 [5] call-related transactions and 3GPP TS 29.163 [4] procedures related to a termination towards a BICC network

Procedure defined in 3GPP TS 29.163 [4]	Transaction used in Q.1950 [14]	Transaction used in TS 29.232 [5]	Support	Comment
Establish Bearer	Establish_BNC_Notify +(tunnel)	Establish Bearer (NOTE 1)	Optional (NOTE 5)	
Prepare Bearer	Prepare_BNC_Notify +(tunnel)	Prepare Bearer (NOTE 1), (NOTE 2)	Optional (NOTE 5)	
Change Through- Connection	n.a. for re-use	Change Through-Connection	Optional (NOTE 5)	only the Explicit (MGC Controlled Cut-Through) procedure is supported
Release Bearer	n.a. for re-use	Release Bearer	Optional (NOTE 5)	(NOTE 3)
Release Termination	n. a. for reuse	Release Termination	Optional (NOTE 5)	Includes Subtract in the transaction. Statistics about "Ctmbits" are not applicable in Sub.resp
Bearer Established	n. a. for reuse	Bearer Established	Optional (NOTE 5)	
Bearer Released	n. a. for reuse	Bearer Released	Optional (NOTE 5)	
Send Tone	n,a. for re-use	Send Tone	Optional (NOTE 5)	
Stop Tone	n,a. for re-use	Stop Tone	Optional (NOTE 5)	
Play Announcement	n. a. for reuse	Play Announcement	Optional (NOTE 5)	
Stop Announcement	n. a. for reuse	Stop Announcement	Optional (NOTE 5)	
Announcement Completed	n. a. for reuse	Announcement Completed n	Optional (NOTE 5)	
Bearer Modification Support	Not defined	Bearer Modification Support	Optional (NOTE 5)	
Confirm Char	Confirm_Char	Confirm Bearer Characterictics (NOTE 1)	Optional (NOTE 6)	
Modify Bearer Characteristics	Modify Char	Modify Bearer Characteristics (NOTE 1)	Optional (NOTE 6)	
Reserve Char	Reserve_Char_Notify	Reserve Bearer Characteristics (NOTE 1)	Optional (NOTE 6)	
Bearer Modified	BNC Modified	Bearer Modified	Optional (NOTE 6)	
Activate Voice Processing Function	n. a. for reuse	Activate Voice Processing Function	Optional (NOTE 5)	
Tunnel Information Down	Tunnel (MGC-MGW)	Tunnel Information Down	Optional (NOTE 7)	For IP Transport at BICC termination
Tunnel Information Up	Tunnel (MGW-MGC)	Tunnel Information Up	Optional (NOTE 7)	For IP Transport at BICC termination
Termination heartbeat	Not defined	Termination heartbeat indication	Mandatory	
Not defined	Not defined	TFO Activation	Optional	
Not defined	Not defined	Codec Modify	Optional	
Not defined	Not defined	Optimal Codec and Distant List_Notify	Optional	
Not defined	Not defined	Distant Codec List	Optional	
Not defined	Not defined	TFO status Notify	Optional	
Not defined	Not defined	TFO status	Optional	

- NOTE 1: The procedure is only applicable if the Nb framing protocol is applied at the BICC termination. Only requesting of Observed events defined in the corresponding TS 29.232 and parameters defined in the "3GUP" package of TS 29.232 are applicable in addition the parameters of the corresponding Q.1950 procedure. Those parameters shall be applies as follows: UP mode = Supported mode; UP versions = 2; interface = CN;
- NOTE 2: Parameters and Observed events defined for Cellular Text telephone Modem Text Transport in the corresponding procedure of TS 29.232 are not applicable.
- NOTE 3: VOID NOTE 4: VOID
- NOTE 5: Necessary for optional terminations towards BICC NOTE 6: Optional for optional terminations towards BICC
- NOTE 7: Necessary for optional terminations towards BICC network with IP transport

A.17.5 Multiplex Termination Procedures

A.17.5.1 Procedures related to a Multiplex termination

Table A.17.5.1/1: Correspondence between ITU-T Recommendation Q.1950 [13] or 3GPP TS 29.232 [5] call-related transactions and 3GPP TS 29.163 [4] procedures related to a multiplex termination

Procedure defined in 3GPP	Transaction used in Q.1950 [14]	Transaction used in TS 29.232 [5]	Support	Comment
TS 29.163 [4]	' '	1		
Add Multiplex Termination	Not defined	Not defined	Optional (NOTE 1)	See A.17.5.2
Configure Multiplex Termination	Not defined	Not defined	Optional (NOTE 1)	See A.17.5.3
Signal H245 Message	Not defined	Not defined	Optional (NOTE 1)	See A.17.5.4
Notify H245 message	Not defined	Not defined	Optional (NOTE 1)	See A.17.5.5
Notify MONA Preference Reception	Not defined	Not defined	Optional (NOTE 1)	See A.17.5.6
Notify MONA Preference Completed	Not defined	Not defined	Optional (NOTE 1)	See A.17.5.7
Signal SPC	Not defined	Not defined	Optional (NOTE 1)	See A.17.5.8
Notify SPC	Not defined	Not defined	Optional (NOTE 1)	See A.17.5.9
Notify MPC	Not defined	Not defined	Optional (NOTE 1)	See A.17.5.10
Notify Detection of Legacy Interworking	Not defined	Not defined	Optional (NOTE 1)	See A.17.5.11
Stop MPC	Not defined	Not defined	Optional (NOTE 1)	See A.17.5.12
Stop SPC	Not defined	Not defined	Optional (NOTE 1)	See A.17.5.13
Stop MONA Negotiation	Not defined	Not defined	Optional (NOTE 1)	See A.17.5.14
	ry for interworking of multimedia	calls	•	

A.17.5.2 Add Multiplex Termination

When the procedure "Add Multiplex Termination" is required the following procedure is initiated:

The MGCF sends an Add.req command with the following information.

1 Add.req (Add Multiplex Termination) MGCF to IM-MGW

Table A.17.5.2/1: Add Multiplex Termination Request

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1 Termination ID = ?	
	Muxdescriptor	
	If MONA procedures not supported:	
	NotificationRequested (Event ID	
	= X,	
	"Incoming H245 message")	
	f MONA procedures supported:	
	NotificationRequested (Event ID	
	= x, "Incoming H245 message	
	(SPC=Both)")	
	NotificationRequested (Event ID = x,	
	"termination heartbeat")	
	If indication on Bearer Released	
	requested:	
	NotificationRequested (Event ID = x, "BNC Release (Cause)") – as	
	defined in ITU-T	
	Recommendation Q.1950	
	If MONA procedures supported:	
	Signal = Outgoing MONA	
	preferences	
	(Outgoing MONA preference content) (NOTE)	
	NotificationRequested (Event ID	
	= X,	
	"MONA Preference recv")	
	NotificationRequested (Event ID = x,	
	"MONA Preference completed")	
	NotificationRequested (Event ID = x,	
	"Legacy Interworking Detected"	
	(Signal = Outgoing H245	
	message (Outgoing H.245 message content)	
))	
	NotificationRequested (Event ID = x,	
	"Mona Preference Channel reception")	
	Signal = Forward media in MPC (MPC MUX Code)	
	Incoming Multiplex Table	
NOTE: The frequent retransmiss	ions of MONA preference messages requ	ired by MONA procedures are to be

The frequent retransmissions of MONA preference messages required by MONA procedures are to be performed by the IM-MGW autonomously to avoid unnecessary load at the Mn interface and the MGCF.

On receipt of this procedure, and the setting of the muxdescriptor, the IM-MGW shall initiate the H.324 negotiation, with connection mode H.324M and predefined Highest Multiplexing Level.

When the processing of command (1) is complete, the IM-MGW initiates the following procedure.

2 Add.resp (Add Multiplex Termination Ack)

Table A.17.5.2/2: Add Multiplex Termination Acknowledge

Address Information	Control information	Bearer information
	Transaction ID = z Context ID = c1 Termination ID = mux1	

A.17.5.3 Configure Multiplex Termination

When the procedure "Configure Multiplex Termination" is required the following procedure is initiated:

The MGCF sends an Mod.req command with the following information.

1 Mod.req (Configure Multiplex Termination) MGCF to IM-MGW

Table A.17.5.3/1: Configure Multiplex Termination Request

Control information	Bearer information
Transaction ID = z	
Context ID = c1	
Termination ID = mux1	
If MONA completed or MONA not	
1 1	
Outgoing Multiplex table	
If MONA MPC sending is requested: Signal = Forward media in MPC (MPC MUX Code)	
	Transaction ID = z Context ID = c1 Termination ID = mux1 If MONA completed or MONA not supported: Remote H223 Capability Incoming Multiplex table Outgoing Multiplex table If MONA MPC sending is requested: Signal = Forward media in MPC

When the processing of command (1) is complete, the IM-MGW initiates the following procedure.

2 Mod.resp (Configure Multiplex Termination Ack)

Table A.17.5.3/2: Configure Multiplex Termination Acknowledge

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = mux1	

A.17.5.4 Signal H245 Message

When the procedure "Signal H245 Message" is required the following procedure is initiated:

The MGCF sends an Mod.req command with the following information.

1 Mod.req (Signal H245 Message) MGCF to IM-MGW

Table A.17.5.4/1: Signal H245 Message Request

Address Information	Control information	Bearer information
	Transaction ID = z Context ID = c1 Termination ID = mux1	
	Signal = Outgoing H245 message (Outgoing H.245 message content)	

When the processing of command (1) is complete, the IM-MGW initiates the following procedure.

2 Mod.resp (Signal H245 Message Ack)

Table A.17.5.4/2: Signal H245 Message Acknowledge

Address Information	Control information	Bearer information
	Transaction ID = z Context ID = c1 Termination ID = mux1	

A.17.5.5 Notify H.245 Message

When the procedure "Notify H.245 message" is required the following procedure is initiated: the IM-MGW sends a NOT.req command with the following information.

1 Not.req (Notify H245 Message) IM-MGW to MGCF

Table A.17.5.5/1: Notify H245 Message Request

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = mux1	
	Event_ID (Event ID = x ,	
	"Incoming H245 message	
	(H245 message content)")	
	,,	

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

2 Not.resp (Notify H245 Message Ack) MGCF to IM-MGW

Table A.17.5.5/2: Notify H245 Message Acknowledge

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = mux1	

A.17.5.6 Notify MONA Preference Reception

When the procedure "Notify MONA Preference Reception" is required the following procedure is initiated: the IM-MGW sends a NOT.req command with the following information.

1 Not.req (Notify MONA Preference Reception) IM-MGW to MGCF

Table A.17.5.6/1: Notify MONA Preference Reception Request

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	ļ
	Termination ID = mux1	
	Event_ID (Event ID = x ,	
	"MONA Preference recv	
	(MONA preference message	
	content)")	
	, ,	

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

2 Not.resp (Notify MONA Preference Reception) MGCF to IM-MGW

Table A.17.5.6/2: Notify MONA Preference Reception Acknowledge

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = mux1	

A.17.5.7 Notify MONA Preference Completed

When the procedure "Notify MONA Preference Completed" is required the following procedure is initiated: the IM-MGW sends a NOT.req command with the following information.

1 Not.req (Notify MONA Preference Completed) IM-MGW to MGCF

Table A.17.5.7/1: Notify MONA Preference Completed Request

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = mux1	
	Event_ID (Event ID = x ,	
	"MONA Preference	
	completed ")	
	. ,	

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

2 Not.resp (Notify MONA Preference Completed) MGCF to IM-MGW

Table A.17.5.7/2: Notify MONA Preference Completed Acknowledge

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = mux1	

A.17.5.8 Signal SPC

When the procedure "Signal SPC" is required the following procedure is initiated:

The MGCF sends an Mod.req command with the following information.

1 Mod.req (Signal SPC) MGCF to IM-MGW

Table A.17.5.8/1: Signal SPC Request

Address Information	Control information	Bearer information
	Transaction ID = z Context ID = c1 Termination ID = mux1	
	Signal = Outgoing H245 message (Outgoing H.245 message content, SPC Out=ON)	

When the processing of command (1) is complete, the IM-MGW initiates the following procedure.

2 Mod.resp (Signal SPC Ack)

Table A.17.5.8/2: Signal SPC Acknowledge

Address Information	Control information	Bearer information
	Transaction ID = z Context ID = c1 Termination ID = mux1	
	Terrimation ID = Max1	

A.17.5.9 Notify SPC

When the procedure "Notify SPC" is required the following procedure is initiated: the IM-MGW sends a NOT.req command with the following information.

1 Not.req (Notify SPC) IM-MGW to MGCF

Table A.17.5.9/1: Notify SPC Request

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = mux1	
	Event_ID (Event ID = x ,	
	"(Incoming H245 message	
	(H245 message content, SPC	
	In=ON)")	
	, ,	

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

2 Not.resp (Notify SPC Ack) MGCF to IM-MGW

Table A.17.5.9/2: Notify SPC Acknowledge

Address Information	Control information Bearer informati	
	Transaction ID = z	
	Context ID = c1	
	Termination ID = mux1	

A.17.5.10 Notify MPC

When the procedure "Notify MPC" is required the following procedure is initiated: the IM-MGW sends a NOT.req command with the following information.

1 Not.req (Notify MPC) IM-MGW to MGCF

Table A.17.5.10/1: Notify MPC Request

Address Information	Control information	Bearer information	
	Transaction ID = z Context ID = c1 Termination ID = mux1 Event_ID (Event ID = x,		

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

2 Not.resp (Notify MPC Ack) MGCF to IM-MGW

Table A.17.5.10/2: Notify MPC Acknowledge

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = mux1	

A.17.5.11 Notify Detection of Legacy Interworking

When the procedure "Notify Detection of Legacy Interworking" is required the following procedure is initiated: the IM-MGW sends a NOT.req command with the following information.

1 Not.req (Notify Detection of Legacy Interworking) IM-MGW to MGCF

Table A.17.5.11/1: Notify Detection of Legacy Interworking Request

Control information	Bearer information
Transaction ID = z Context ID = c1 Termination ID = mux1 Event_ID (Event ID = x, "Legacy Interworking Detected ")	
	Transaction ID = z Context ID = c1 Termination ID = mux1 Event_ID (Event ID = x, "Legacy Interworking

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

2 Not.resp (Notify Detection of Legacy Interworking) MGCF to IM-MGW

Table A.17.5.11/2: Notify Detection of Legacy Interworking Acknowledge

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = mux1	

A.17.5.12 Stop MPC

When the procedure "Stop MPC" is required the following procedure is initiated:

The MGCF sends an Mod.req command with the following information.

1 Mod.req (Stop MPC) MGCF to IM-MGW

Table A.17.5.12/1: Stop MPC Request

Address Information	Control information	Bearer information	
	Transaction ID = z		
	Context ID = c1		
	Termination $ID = mux1$		
	Signal = x, NOTE 1		
	NotificationRequested (Event ID = x, NOTE 2)		
NOTE 1: The signal descriptor shall not include the "Forward media in MPC" signal.			
	NOTE 2: The event descriptor shall not include the "Mona Preference Channel reception" event.		

When the processing of command (1) is complete, the IM-MGW initiates the following procedure.

2 Mod.resp (Stop MPC Ack)

Table A.17.5.12/2: Stop MPC Acknowledge

Address Information	Control information Bearer information	
	Transaction ID = z Context ID = c1 Termination ID = mux1	

A.17.5.13 Stop SPC

When the procedure "Stop SPC" is required the following procedure is initiated:

The MGCF sends a Mod.req command with the following information.

1 Mod.req (Stop SPC)MGCF to IM-MGW

Table A.17.5.13/1: Stop SPC Request

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = mux1	
	If legacy H.245 or accelerated	
	H.245 required:	
	Signal = Outgoing H245 message	
	(Outgoing H.245 message	
	content, SPC Out=OFF)	
	NotificationRequested (Event ID	
	=	
	x, "Incoming H245 message	
	(SPC=H245)") NOTE 3	
	If legacy H.245 or accelerated H.245	
	not required:	
	Signal = x, NOTE 1	
	Natification Requested (Event ID –	
	NotificationRequested (Event ID = x,	
	NOTE 2)	
	1101227	
NOTE 1: The signal descriptor shall	I not include the "Outgoing H.245 message	e" signal.
	not include the "Incoming H.245 message	
NOTE 3: SPC parameter may be o	mitted, as SPC=H245 is the default value.	

When the processing of command (1) is complete, the IM-MGW initiates the following procedure.

2 Mod.resp (Stop SPC Ack)

Table A.17.5.13/2: Stop SPC Acknowledge

Address Information	Control information	Bearer information
	Transaction ID = z Context ID = c1 Termination ID = mux1	

A.17.5.14 Stop MONA Negotiation

When the procedure "Stop MONA negotiation" is required the following procedure is initiated:

The MGCF sends a Mod.req command with the following information.

1 Mod.req (Stop MONA Negotiation) MGCF to IM-MGW

Table A.17.5.14/1: Stop MONA Negotiation Request

Address Information	Control information	Bearer information
	Transaction ID = z Context ID = c1 Termination ID = mux1	
	Signal = x, NOTE 1	
	NotificationRequested (Event ID = x, NOTE 2)	
	If legacy H.245 or accelerated H.245 required: Signal = Outgoing H245 message (Outgoing H.245 message content, SPC Out=OFF)	
	NotificationRequested (Event ID = x, "Incoming H245 message (SPC=H245)") NOTE 3	

NOTE 1: The signal descriptor shall not include any of the signals "Outgoing MONA preferences" and "Forward media in MPC". If legacy H.245 or accelerated H.245 is not required the signal descriptor shall also not include the "Outgoing H.245 message" signal.

NOTE 3: SPC parameter may be omitted, as SPC=H245 is the default value.

When the processing of command (1) is complete, the IM-MGW initiates the following procedure.

2 Mod.resp (Stop MONA Negotiation Ack)

Table A.17.5.14/2: Stop MONA Negotiation Acknowledge

Address Information	Control information	Bearer information
	Transaction ID = z	
	Context ID = c1	
	Termination ID = mux1	

A.17.6 SIP-I on Nc Terminations Procedures

A.17.6.1 Summary of Procedures related to a termination towards SIP-I on Nc CN Subsystem

The interworking between IMS domain and SIP-I on Nc is specified by 3GPP TS 29.235 [47] which requires the procedures for SIP-I on Nc as specified in 3GPP TS 23.231 [48] Clause 15.2.

Table A.17.6.1.1 shows the relationship between each call-related procedure in ITU-T Recommendation Q.1950 [14] (see 3GPP TS 29.205 [3]) or TS 29.232 [5] and the corresponding stage 2 procedure defined in 3GPP TS 23.231 [48].

NOTE 2: The event descriptor shall not include any of the events "MONA Preference recv", "MONA Preference completed" and "Mona Preference Channel reception". If legacy H.245 or accelerated H.245 is not required the event descriptor shall also not include the "Incoming H.245 message" event.

Table A.17.6.1.1: Correspondence between ITU-T Recommendation Q.1950 [13] or 29.232 [5] callrelated transactions and 3GPP TS 23.231 [48] procedures

Procedure defined in 3GPP TS 23.231 [48]	Transaction used in Q.1950 [14]	Transaction used in TS 29.232 [5]	Supported	Comment
Reserve RTP Connection Point	Not defined	Reserve RTP Connection Point (NOTE2)	Optional (NOTE1)	See A.17.2. 2
Configure RTP Connection Point	Not Defined	Configure RTP Connection Point (NOTE2)	Optional (NOTE1)	See A.17.2. 3
Reserve and Configure RTP Connection Point	Not defined	Reserve and Configure RTP Connection Point (NOTE2)	Optional (NOTE1)	See A.17.2. 4
Release Termination	n. a. for reuse	Release Termination	Mandatory	Includes Subtract in the transaction. Statistics about "Ctmbits" are not applicable in Sub.resp
Change Through-Connection	n.a. for re-use	Change Through- Connection	Optional (NOTE 1)	only the Explicit (MGC Controlled Cut-Through) procedure is supported
Bearer Released	n. a. for reuse	Bearer Released	Optional (NOTE 1)	
Send Tone	n,a. for re-use	Send Tone	Optional (NOTE 1)	
Stop Tone	n,a. for re-use	Stop Tone	Optional (NOTE 1)	
Play Announcement	n. a. for reuse	Play Announcement	Optional (NOTE 1)	
Stop Announcement	n. a. for reuse	Stop Announcement	Optional (NOTE 1)	
Announcement Completed	n. a. for reuse	Announcement Completed n	Optional (NOTE 1)	
Activate Voice Processing Function	n. a. for reuse	Activate Voice Processing Function	Optional (NOTE 1)	
Termination heartbeat	Not defined	Termination heartbeat indication	Mandatory	
Not defined	Not defined	TFO Activation	Optional	
Not defined	Not defined	Codec Modify	Optional	
Not defined	Not defined	Optimal Codec and Distant List_Notify	Optional	
Not defined	Not defined	Distant Codec List		
Not defined	Not defined	TFO status Notify	Optional	
Not defined	Not defined	TFO status	Optional	

NOTE 1: Mandatory for connections towards SIP-I on Nc.

NOTE 2: The existing IMS Connection Point Procedures are functionally similar to these 29.232 procedures as they were derived from the IMS ones.

Annex B (normative): Void

Annex C (normative): Void

Annex D (informative): Change history

	Change history						
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2004-09	CN#25				Approved in CN#25	2.0.0	6.0.0
2005-03	CN#27	NP-050045	001	1	Introduction Of Formal Profile	6.0.0	6.1.0
			002	1	Corrections to Mn Specification		
2005-06	CT#28	CP-050208	0001	4	Introduction Of Formal Profile	6.1.0	6.2.0
		CP-050208	0005		Inclusion of Insert Digit Procedure at IMS termination		
2005-09	CT#29	CP-050442	0007	3	Alignment of Mn Profile with ITU template and Mc interface	6.2.0	6.3.0
					decisions		
		CP-050454			Alignment of Mn Profile with TISPAN TMGW	6.3.0	7.0.0
2005-12	CT#30	CP-050630			Clean-up of hanging contexts and terminations	7.0.0	7.1.0
		CP-050619			Addition of TFO procedure		
		CP-050630		2	Add virtual media gateway function		
		CP-050619			Alignment with TISPAN		
		CP-050619			Open Mn		
2006-03	CT#31	CP-060077			Add the UDPTL/TCPTL transport and mediatype for T.38	7.1.0	7.2.0
		CP-060077		2	Clarification the SDP used in the BICC termination		
		CP-060077			Remove the redundant symbols		
		CP-060066			Bearer Released Event to Reserve TDM Circuit procedure		<u> </u>
		CP-060066		1	BICC packages in Mn profile		ļ
		CP-060066	0034		Service Change Method "Disconnected" and "Failover" removal		
	0.70	05.00011		ļ.,	from Service Changes sent by MGCF		
2006-06	CT#32	CP-060314			Alignment with TISPAN TGW profile	7.2.0	7.3.0
		CP-060306		1	Corrections to Mn Specification for Inter Vendor Operability		
			0041	ļ	Update of Mn profile with packages defined in 29.232		
			0044	1	Adding of Bearer Released Event to Procedures related to a		
			0040	_	termination towards IM CN Subsystem		
0000 00	OT#00	OD 000404	0046		Mode-change-period support on Mn interface	700	7.4.0
2006-09	CT#33	CP-060401		1	AuditValue procedure	7.3.0	7.4.0
		CP-060410		0	Alignment Mn towardsTISPAN Endorsement		+
		CP-060410			Removal of duplicated functionality in body of specification		+
]		CP-060401	0053	1	Definition of the use of mandatory and optional in Mn Profile		
		CP-060401	00E4	1	Template Missing Procedures Towards IMS		+
		CP-060401			Correction to Terminations chapter		+
		CP-060410			Corrections to Profile Description: Descriptors		+
		CP-060401		<u>'</u>	Corrections to Profile Description: Command API		+
		CP-060401		1	Corrections to Profile Description: Packages		+
2006-12	CT#34	CP-060570			Alignment of Mn towards TISPAN Endorsement	7.4.0	7.5.0
2000 12	01//04	CP-060570		1	Setting of 3GPP manadatory parameters to conditional	7.4.0	7.0.0
		CP-060570		i e	CR miss implementation Call independent procedures and		+
		0. 0000.0	007.		packages		
		CP-060570	0075	2	Removal of TBD for Number of Commands Per Transaction		1
		CP-060570	0080	_	Missing Procedures Towards IMS		1
		CP-060725		1	Profile registration procedure		
		CP-060725		2	Rules for SDP equivalents		
		CP-060725			Codec Parameters		
2007-03	CT#35	CP-070013		1	Further Alignment of Mn Towards TISPAN Endorsement	7.5.0	7.6.0
2007-06	CT#36	CP-070323	0087		Addition of missing references and text corrections	7.6.0	7.7.0
		CP-070434	8800	3	Multimedia interworking Mn procedures		
		CP-070323	0089	1	Wrong implementation of CP-060401 / C4-060998 (CR 0048r1		
					29.332 Rel-7)		
		CP-070315			RFC 3309 for SCTP checksum		
2007-09	CT#37	CP-070538			Corrections to Multimedia Interworking	7.7.0	7.8.0
			0094	3	Service Change Methods and Reasons		
			0095		Correction to Package Ids		
	<u> </u>	1	0097	<u> </u>	Priority Indicator in Context Attributes		
			0099		H.248 Message Encoding		
			0101		Correction to Re-use of Procedures		
	ļ		0103		Correction to Signals Descriptor		1
			0105		Correction to Events Descriptor		1
			0107		Clarification of Message Identifier		1
			010	1	IP realm connection indication		1
			011	2	Correction of parameter in Sending H.245 Message		1
			0112		Mn profile corrections		<u> </u>
			0117	1	Corrections to maxptime syntax in SDP of encoding of AMR codec		

2007-12	CT#38	CP-070742	0123	1	Properties returned in commands	7.8.0	7.9.0
		CP-070746	0119	1	Inactivity timout procedures – Alignment to Mc profile		
		CP-070746	0125	1	Audit of individual TDM terminations		
2007-12	CT#38	CP-070757	0118		Termination heartbeat – Alignment to Mc profile	7.9.0	8.0.0
2008-03	CT#39	CP-080023	0126		IP version in SDP_C	8.0.0	8.1.0
		CP-080012	0129	1	Correction on the Mn profile: BNC Release event		
2008-06	CT#40	CP-080272	0130		Updating Mn interface profile "threegimscsiw" to version 3	8.1.0	8.2.0
2008-09	CT#41	CP-080469	0131	2	Mona H.248 package definitions	8.2.0	8.3.0
		CP-080454	0134		Service Change Reason in (G)MSC Server Out of Service		
2008-12	CT#42	CP-080704	0135	1	Mona H.248 package definitions update	8.3.0	8.4.0
		CP-080704	0136		Mn profile update for Mona H.248 package definitions		
		CP-080701	0137	1	Clarification of RTCP messages usage in the interworking		
					gateways		
		CP-080686	0138	3	Alignment of stage 3 MGCF-IM_MGW protocol with Stage 2 for		
					SIP-I on Nc interworking to IMS		
2009-03	CT#43	CP-090031	0139	1	Mn profile update for H.245 and RTCP Interactions H.248 package	8.4.0	8.5.0
					definitions	Ţ	
			0140		Updating H.248.12 amendment 2 to reference list		
2009-06	CT#44	CP-090298	0141	1	Update of stage 3 MONA to newest H.248.72 (ex. H.248.MONA)	8.5.0	8.6.0
					draft	ļ	
			0142		Update of MONA stage 3 due to MONA procedures stage 2		
					changes		
2009-12	CT#46	CP-090967			Correction to Profile for Commands marked optional	8.6.0	8.7.0
		CP-090763	0148		Commands Using IP Interface Type		
2009-12	CT#46				Upgraded unchanged from Rel-8	8.7.0	9.0.0
2010-03	CT#47	CP-100028			MONA H.248 package update	9.0.0	9.1.0
		CP-100028		1	ASN.1 encoding of RTCP Feedback Message package		
		CP-100028			MONA alignments to H.324	<u> </u>	
		CP-100037	0150	1	Global Text Telephony Interworking between IMS and Circuit		
					Switched	1	
		CP-100037		1	Resolution of External TISPAN Referencing		
2010-09	CT#47	CP-100450	0159		ITU-T H.248.71 and H.248.72 publication	9.1.0	9.2.0

History

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V9.0.0	February 2010	Publication				
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