

ETSI TS 183 031 V2.0.0 (2008-02)

Technical Specification

**Telecommunications and Internet converged Services and
Protocols for Advanced Networking (TISPAN);
IP Multimedia: H.248 Profile for controlling
Multimedia Resource Function Processors (MRFP)
in the IP Multimedia System (IMS);
Protocol specification**

[3GPP TS 29.333 Release 7, modified]



Reference

RTS/TISPAN-03146-NGN-R2

Keywords

IMS, H.248, endorsement

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

1 Scope

The present document provides the necessary extensions and modifications to 3GPP TS 29.333 [1] required for use in a TISPAN NGN.

3GPP TS 29.333 [1] describes the protocol to be used on the Multimedia Resource Function Controller (MRFC) - Multimedia Resource Function Processor (MRFP) interface (Mp interface). This specification defines a profile of the Gateway Control Protocol (H.248.1), for controlling Multimedia Resource Function Processor supporting in-band user interaction, conferencing and transcoding for multimedia-services.

2 References

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

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
 - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
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2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] 3GPP TS 29.333: "Multimedia Resource Function Controller (MRFC) - Multimedia Resource Function Processor (MRFP) Mp Interface - Stage 3; (Release 7)".
- [2] ITU-T Recommendation H.imp 248: "Implementors' Guide for the H.248 Sub-series of Recommendations ("Media Gateway Control Protocol)".
- [3] IETF RFC 2833: "RTP Payload for DTMF Digits, Telephony Tones and Telephony Signals".
- [4] IETF RFC 3551: "RTP Profile for Audio and Video Conferences with Minimal Control".
- [5] IETF RFC 3555: "MIME Type Registration of RTP Payload Formats".
- [6] IETF RFC 3389: "Real-time Transport Protocol (RTP) Payload for Comfort Noise (CN)".
- [7] ITU-T Recommendation G.711: "Pulse code modulation (PCM) of voice frequencies".

- [8] ITU-T Recommendation G.711 Appendix I: "A high quality low-complexity algorithm for packet loss concealment with G.711".
- [9] ITU-T Recommendation G.711 Appendix II: "A comfort noise payload definition for ITU-T G.711 use in packet-based multimedia communication systems".
- [10] ITU-T Recommendation H.248.45: "Gateway control protocol: MGC information package".
- [11] ETSI ES 201 235-3: "Access and Terminals (AT); Specification of Dual-Tone Multi-Frequency (DTMF) Transmitters and Receivers; Part 3: Receivers".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TS 29.333 [1] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TS 29.333 [1] and the following apply:

NGN Next Generation Network

Endorsement notice

The present document endorses 3GPP TS 29.333 [1], the contents of which apply together with the exception of clause 1 and the modifications being covered herein.

Global modifications to 3GPP TS 29.333

Throughout the text of 3GPP TS 29.333 [1]

Replace "MGW" with "MRFP"

Replace references as shown in table 1.

Table 1

	Reference(s) in 3GPP TS 29.333 [1]	Replaced reference(s)
1	3GPP TS 23.228: IP Multimedia Subsystem (IMS); Stage 2.	ETSI TS 182 006
2	3GPP TS 23.002: Network architecture.	ETSI ES 282 007
25	3GPP TS 23.333: "Multimedia Resource Function Controller (MRFC) - Multimedia Resource Function Processor (MRFP) Mp interface: Procedures Descriptions".	Not Applicable to TISPAN NGN.
26	ITU-T Recommendation H.248.9a1 (03/2007), "Gateway control protocol: Advanced media server package (draft work in progress)".	ITU-T Recommendation H.248.9 Amendment 1 (08/2007), "Gateway control protocol: Advanced media server packages - Amendment 1: ASR, TTS and Multimedia enhancements".

5.1 Profile Identification

Modify table 5.1.1 as follows:

Table 5.1.1: Profile Identification

Profile name:	MRF or ETSIprof_MediaServer
Version:	1

5.3 Gateway Control Protocol Version

Modify the text as follows:

Version 2 shall be the minimum version supported. Support of this version implies conformance to ITU-T Recommendation H.248 Version 2 [3] and Corrigendum 1, and implementation of the corrections available in the latest version of the H.248 Implementors' Guide [2].

5.7.1 Stream Descriptor

Add the following table:

Table 5.7.1.1.2A: Local control properties

Properties associated with Local Control Descriptor supported		Yes	
<i>If yes</i>	Property IDs Reported	Termination type	Stream type
	MGCinfo/db	RTP	Any
	nt/jit	RTP	Any
	aassm/*	RTP	Audio/Video
	aasrec/*	RTP	Audio/Video
	vcp/level	RTP	Audio
	vImp/mixlevel	RTP	Audio
	vImp/nspeakmix	RTP	Audio
	mvLcp/mixpartnum	RTP	Audio
	mvLcp/vollevip	RTP	Audio

5.7.2 Events Descriptor

Add the following three lines to table 5.7.2.1:

	Event ID	Termination Type	Stream Type
	vdp/*	RTP	Audio
	aasdc/*	RTP	Audio
	xdd/*	RTP	Audio

Modify table 5.7.2.4 as follows:

Table 5.7.2.4: Embedding in event

Embedded events in an event descriptor:	Yes
Embedded signals in an event descriptor:	Yes

5.7.4 Signals Descriptor

Add the following three lines to table 5.7.4.1

	Signal ID	Termination Type	Stream Type/ID
	aassm/*	RTP	Audio/Video
	indview/*	RTP	Any
	an/*	RTP	Audio/Video

Modify table 5.7.4.5 as follows:

Table 5.7.4.5: Notify completion

Notify completion supported:	Yes	
<i>If yes</i>	Signal ID	Type of completion supported
	cg/*, svrtn/*, xcg/*, an/*, int/*, biztn/*, confn/*, tonegen/*, bcg/*, aasb/*, indview	ALL

Modify table 5.7.4.6 as follows:

Table 5.7.4.6: RequestID Parameter

RequestID Parameter Supported:	Yes
NOTE: When the event is provisioned in the media gateway, the Request Id is set to FFFFFFFF'H.	

Modify table 5.7.4.7 as follows:

Table 5.7.4.7: Signals played simultaneously

Signals played simultaneously:	Yes	
<i>If yes</i>	Signal Ids that can be played simultaneously:	-

5.7.5 DigitMap Descriptor

Modify table 5.7.5.1 as follows:

Table 5.7.5.1: DigitMap Descriptor

DigitMaps supported:	Yes		
<i>If yes</i>	DigitMap Name	Structure	Timers

5.8.8 ServiceChange

Modify table 5.8.8 as follows:

Table 5.8.8.4: Service Change Delay

ServiceChangeDelay used:	Yes	
<i>If yes</i>	Valid time period:	-

5.9 Generic Command Syntax and Encoding

Replace table 5.9.1 as follows:

Table 5.9.1: Encoding

Supported Encodings:	Text encoding shall be supported by both the MRFP and the MRFC. Both the long and short form of text encoding shall be supported at the receiving side.
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5.14.1 Mandatory Packages

Add the following line to table 5.14.1:

RTP Package (ITU-T Recommendation H.248.1 [3])	rtp	1
------------------------------------------------	-----	---

5.14.2 Optional Packages

Remove the following line to table 5.14.2

RTP Package (H.248.1, [3])	rtp	1	
----------------------------	-----	---	--

Add the following lines to table 5.14.2

Extended DTMF Detection (H.248.16 [10])	xdd	1	Support is mandatory if DTMF collection is supported and the AAS Digit Collection package is not supported, optional otherwise.
AAS Digit collection (H.248.9 [6])	aasdc	2	Support is mandatory if ADVANCED_UI, optional otherwise.
Floor Control (H.248.19 [11])	fcp	1	Support is mandatory if ADVANCED_CONFERENCING is supported, not required otherwise.
View (H.248.19 [11])	indview	1	Support is mandatory if ADVANCED_CONFERENCING is supported, not required otherwise.
Volume Control (H.248.19 [11])	vcp	1	Support is mandatory if ADVANCED_CONFERENCING is supported, optional otherwise.
Volume Detection (H.248.19 [11])	vdt	1	Support is mandatory if ADVANCED_CONFERENCING is supported, optional otherwise.
Volume Level Mixing (H.248.19 [11])	vlm	1	Support is mandatory if ADVANCED_CONFERENCING is supported, not required otherwise.
Mixing Volume Level Control (H.248.19 [11])	mvlc	1	Support is mandatory if ADVANCED_CONFERENCING is supported, not required otherwise.
Inactivity Timer (H.248.14 [9])	it	1	Support is mandatory if UDP transport is enabled for H.248 messages.
MGC Information (H.248.45 see note)	MGCInfo	1	This package may be supported as an operator option. For this profile the information string shall be limited to 32 octets in length.
NOTE: See [10] in TS 183 031.			

5.14.3 Package Usage Information

Clause 5.14.3 of [1] applies with the following additions:

5.14.3.26A Extended DTMF detection package

Table 5.14.3.26a: Package usage information for extended DTMF detection package

Properties	Mandatory/ Optional	Used in command	Supported Values	Provisioned Value
None	Not applicable	Not applicable	Not applicable	Not applicable
Signals	Mandatory/ Optional	Used in command		Duration Provisioned Value
None	Not applicable	Not applicable		Not applicable
	Signal Parameters	Mandatory/ Optional	Supported Values	Duration Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable
Events	Mandatory/ Optional	Used in command		
DTMF Digits (see note)	M	ADD, MODIFY, NOTIFY, AUDITVALUE, AUDITCAPABILITY		
	Event Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	None	Not applicable	Not applicable	Not applicable
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	None	Not applicable	Not applicable	Not applicable
Extended Digit Map Completion	M	ADD, MODIFY, NOTIFY, AUDITVALUE, AUDITCAPABILITY		
	Event Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	Buffer Control	M	ALL	0
	Extra Digit Disposition	M	ALL	OFF
	Match Procedure	M	ALL	base
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	digit string	M	ALL	Not applicable
	termination method	M	ALL	Not applicable
	Unmatched Event	M	ALL	Not applicable
Statistics	Mandatory/ Optional	Used in command		Supported Values
None	Not applicable	Not applicable		Not applicable
Error Codes	Mandatory/Optional			
None	Not applicable			

NOTE: DTMF detection shall conform to ES 201 235-3 [11].

5.14.3.26B

AAS digit collection package

Table 5.14.3.26B: Package usage information for AAS digit collection package

Properties	Mandatory/ Optional	Used in command	Supported Values	Provisioned Value
None	Not applicable	Not applicable	Not applicable	Not applicable
Signals	Mandatory/ Optional	Used in command		Duration Provisioned Value
Play Collect	M	ADD, MODIFY, AUDITVALUE, AUDITCAPABILITY		Not applicable
	Signal Parameters	Mandatory/ Optional	Supported Values	Duration Provisioned Value
	Initial Prompt	M	ALL	Not applicable
	Reprompt	M	ALL	Not applicable
	Number of Digits Prompt	M	ALL	Not applicable
	Successful announcement	M	ALL	Not applicable
	Announcement Failure	M	ALL	Not applicable
	Non Interruptable Play	M	ALL	FALSE
	Keep digits	M	ALL	FALSE
	Clear Digits Buffer	M	ALL	FALSE
	Maximum Number of Attempts	M	ALL	1
	Digit Map	M	ALL	Not applicable
	Speed	O	ALL	0
	Volume	M	ALL	0
	Offset	M	ALL	0
	Restart Key	M	ALL	0
	Re-input key	M	ALL	None
	Return Key	M	ALL	None
	Iterations	M	ALL	1
	Interval	M	ALL	None
	End Input Key	M	ALL	None
	Include End Input Key	M	ALL	FALSE
	Voice Information	M	ALL	dtmfonly
	Voice back	M	ALL	novoiceback
	INPA Prompt timer	M	ALL	None
Events	Mandatory/ Optional	Used in command		
Audio Operation Failure	M	ADD, MODIFY, NOTIFY, AUDITVALUE, AUDITCAPABILITY		
	Event Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	None	Not applicable	Not applicable	Not applicable
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	Return Code	M	ALL	Not applicable
Play Collect Success	M	ADD, MODIFY, NOTIFY, AUDITVALUE, AUDITCAPABILITY		
	Event Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	None	Not applicable	Not applicable	Not applicable
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	Digits Collected	M	ALL	Not applicable (see note)
	Number of attempts	M	ALL	Not applicable
	Amount Played	O	ALL	Not applicable

Statistics	Mandatory/ Optional	Used in command	Supported Values
None	Not applicable	Not applicable	Not applicable
Error Codes	Mandatory/Optional		
None	Not applicable		

NOTE: DTMF detection shall conform to ES 201 235-3 [11].

5.14.3.26C Floor control package

Table 5.14.3.26C: Package usage information for floor controlpackage

Properties	Mandatory/ Optional	Used in command	Supported Values	Provisioned Value
Activate Floor Controller	M	ADD, MODIFY, AUDITVALUE, AUDITCAPABILITY	ALL	Not applicable
Signals	Mandatory/ Optional	Used in command		Duration Provisioned Value
None	Not applicable	Not applicable		Not applicable
	Signal Parameters	Mandatory/ Optional	Supported Values	Duration Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable
Events	Mandatory/ Optional	Used in command		
None	Not applicable	Not applicable		
	Event Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable
Statistics	Mandatory/ Optional	Used in command	Supported Values	
None	Not applicable	Not applicable	Not applicable	
Error Codes	Mandatory/Optional			
None	Not applicable			

5.14.3.26D View package

Table 5.14.3.26D: Package usage information for view package

Properties	Mandatory/ Optional	Used in command	Supported Values	Provisioned Value
None	Not applicable	Not applicable	Not applicable	Not applicable
Signals	Mandatory/ Optional	Used in command		Duration Provisioned Value
Being Viewed	M	ADD, MODIFY, AUDITVALUE, AUDITCAPABILITY		Not applicable
	Signal Parameters	Mandatory/ Optional	Supported Values	Duration Provisioned Value
	Viewed by whom	M	ALL	Not applicable
	Viewer Identity	M	ALL	Not applicable
No Viewer	M	ADD, MODIFY, AUDITVALUE, AUDITCAPABILITY		Not applicable
	Signal Parameters	Mandatory/ Optional	Supported Values	Duration Provisioned Value
	None			
Events	Mandatory/ Optional	Used in command		
None	Not applicable	Not applicable		
	Event Parameters	Mandatory/ Optional	Supported Values	Provisioned Value

Properties	Mandatory/ Optional	Used in command	Supported Values	Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable
Statistics	Mandatory/ Optional	Used in command	Supported Values	
None	Not applicable	Not applicable	Not applicable	
Error Codes	Mandatory/Optional			
None	Not applicable			

5.14.3.26E Volume control package

Table 5.14.3.26E: Package usage information for volume control package

Properties	Mandatory/ Optional	Used in command	Supported Values	Provisioned Value
Volume Level	M	ADD, MODIFY, AUDITVALUE, AUDITCAPABILITY	ALL	Not applicable
Signals	Mandatory/ Optional	Used in command		Duration Provisioned Value
None	Not applicable	Not applicable		Not applicable
	Signal Parameters	Mandatory/ Optional	Supported Values	Duration Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable
Events	Mandatory/ Optional	Used in command		
None	Not applicable	Not applicable		
	Event Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable
Statistics	Mandatory/ Optional	Used in command	Supported Values	
None	Not applicable	Not applicable	Not applicable	
Error Codes	Mandatory/Optional			
None	Not applicable			

5.14.3.26F Volume detection package

Table 5.14.3.26F: Package usage information for volume detection package

Properties	Mandatory/ Optional	Used in command	Supported Values	Provisioned Value
None	Not applicable	Not applicable	Not applicable	Not applicable
Signals	Mandatory/ Optional	Used in command		Duration Provisioned Value
None	Not applicable	Not applicable		Not applicable
	Signal Parameters	Mandatory/ Optional	Supported Values	Duration Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable
Events	Mandatory/ Optional	Used in command		
Volume Activity Detection	M	ADD, MODIFY, NOTIFY, AUDITVALUE, AUDITCAPABILITY		
	Event Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	Volume Threshold	M	ALL	Not applicable
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values	Provisioned Value

Properties	Mandatory/ Optional	Used in command	Supported Values	Provisioned Value
	None	Not applicable	Not applicable	Not applicable
Statistics	Mandatory/ Optional	Used in command	Supported Values	Provisioned Value
None	Not applicable	Not applicable	Not applicable	Not applicable
Error Codes	Mandatory/Optional			
None	Not applicable			

5.14.3.26G Volume level mixing package

Table 5.14.3.26G: Package usage information for volume level mixing package

Properties	Mandatory/ Optional	Used in command	Supported Values	Provisioned Value
Volume Mixing Level	M	ADD, MODIFY, AUDITVALUE, AUDITCAPABILITY	ALL	Not applicable
N Speakers Mixing	O	ADD, MODIFY, AUDITVALUE, AUDITCAPABILITY	ALL	Not applicable
Signals	Mandatory/ Optional	Used in command	Supported Values	Duration Provisioned Value
None	Not applicable	Not applicable		Not applicable
	Signal Parameters	Mandatory/ Optional	Supported Values	Duration Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable
Events	Mandatory/ Optional	Used in command	Supported Values	Duration Provisioned Value
None	Not applicable	Not applicable		
	Event Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Statistics	Mandatory/ Optional	Used in command	Supported Values	Provisioned Value
None	Not applicable	Not applicable	Not applicable	Not applicable
Error Codes	Mandatory/Optional			
None	Not applicable			

5.14.3.26H Mixing volume level control package

Table 5.14.3.26H: Package usage information for mixing volume level control package

Properties	Mandatory/ Optional	Used in command	Supported Values	Provisioned Value
Mix Participant Number	M	ADD, MODIFY, AUDITVALUE, AUDITCAPABILITY	ALL	Not applicable
Volume Level Input to Mix	M	ADD, MODIFY, AUDITVALUE, AUDITCAPABILITY	ALL	Not applicable
Signals	Mandatory/ Optional	Used in command	Supported Values	Duration Provisioned Value
None	Not applicable	Not applicable		Not applicable
	Signal Parameters	Mandatory/ Optional	Supported Values	Duration Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable

Properties	Mandatory/ Optional	Used in command	Supported Values	Provisioned Value
Events	Mandatory/ Optional	Used in command		
None	Not applicable	Not applicable		
	Event Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable
	ObservedEvent Parameters	Mandatory/ Optional	Supported Values	Provisioned Value
	Not applicable	Not applicable	Not applicable	Not applicable
Statistics	Mandatory/ Optional	Used in command	Supported Values	
None	Not applicable	Not applicable	Not applicable	
Error Codes	Mandatory/Optional			
None	Not applicable			

5.17 Procedures

Replace the contents of clause 5.17 with the contents of annex ZB of the present document.

Annex ZA (normative): MRFP Functional requirements

Support of the packages identified in the profile definition implies support of the underlying functionality. This annex identifies additional functional requirements that media resource function processors conforming to the present document shall comply with:

- Media Resource Function Processors (MRFP) shall support IPv4 and may support IPv6.
- Media Resource Function Processors (MRFP) shall support G.711 A-law voice codec and may support other codecs. Media Resource Function Processors supporting transcoding are expected to support a wide range of well-known codecs. The list of codecs is outside the scope of the present document.
- Media Resource Function Processors (MRFP) shall support the procedures defined in RFC 2833 [3] to generate, detect and forward DTMF digits. DTMF shall be identified by name (see mode "Named Telephone Events" in clause 3 of RFC 2833 [3]), as opposed to their waveform properties.
- All properties of tones requested by the MRFC shall be provisioned in the MRFP. The MRFC is not required to send the physical characteristics of tones to Media Resource Function Processors (MRFP).

Annex ZB (normative): Procedures

ZB.1 General procedures

Media Resource Function Processors shall discard packets with RTP payload types (PT) that do not match the Local Descriptor contents.

NOTE: Besides an incorrect RTP PT field might be also other reasons for discarding packets (invalid SSRC field, invalid CRC, etc.).

When sending packets from a termination, Media Resource Function Processors shall use the address and port in the Local Descriptor as a source address and port.

ZB.2 Use of voice codecs

ZB.2.1 Comfort noise insertion and silence suppression for voice codecs

If a codec has built-in support for silence suppression and comfort noise insertion, the activation or deactivation of these features shall be indicated using the a= line according to RFC 3551 [4] and RFC 3555 [5].

If the selected codec does not have built in support for silence suppression and Comfort Noise (CN) insertion, the CN payload code [6] may be included in the media description.

E.g. for ITU-T Recommendation G.711 [7], A-Law:

```
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 MRFP shall be prepared to receive CN packets during silence periods. This action also corresponds to an implicit enabling of the silence suppression mode in receiving direction.

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

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

ZB.2.2 DTMF transmission

When a G.711 codec is used, Media Resource Function Processors shall be able to generate, detect and forward DTMF tones inband.

When other codecs are used, the MRFC should request the use of the procedures defined in RFC 2833 [3] to send and receive DTMF tones.

- If the Local Descriptor sent by the MRFC includes the support for RFC 2833 [3], Media Resource Function Processors (MRFP) shall be prepared to receive and detect DTMF tones in the form of named events.
- If the Remote Descriptor indicates that RFC 2833 [3] is supported, Media Resource Function Processors (MRFP) shall be prepared to relay in the form of named events, any DTMF tone that may be received from other ephemeral terminations.

- Media Gateways supporting conferencing or transcoding shall support transcoding between in-band DTMF and named events defined RFC 2833 [3], based on the contents of the Local and Remote descriptors of the involved terminations.

A Dynamic Payload type shall be used to indicate support of RFC 2833 [3] for DTMF relay.

```
EXAMPLE:  v= 0
          c= IN <address type> <connection address>
          m= audio <port number> RTP/AVP 18 110
          a=ptime: 10
          a= rtpmap: 110 telephone-event/8000
          a= fmp: 110 0-15
```

ZB.2.3 Support of G.711 variants

ZB.2.3.1 G.711 Encoding law

Media Resource Function Processors conforming to the present document are required to support G.711 A-Law and may also support μ -Law in order to avoid call failure or transcoding in case the remote entity supports μ -Law only. How and where to perform transcoding in IP networks in case both terminals/gateways do not support the same variant is outside the scope of this profile.

ZB.2.3.2 G.711 packet loss concealment

G.711-over-IP may be operated with or without error loss concealment. Typically is that decision dependent on the IP packet loss rate conditions. G.711 error loss concealment is based on RTP packet granularity, therefore called as Packet Loss Concealment (PLC). ITU-T Recommendation G.711 Appendix I [8] provides a framework for G.711 PLC mode.

ZB.2.3.3 G.711 silence suppression mode

G.711-over-IP may be operated with or without silence suppression. In case of silence suppression, comfort noise generation shall be based on ITU-T Recommendation G.711 Appendix II [9]. These features may be enabled/disabled on a per session basis, using the procedure described in clause ZB.4.

ZB.3 Procedures for basic user interaction

User Interaction procedures are applied to the ephemeral termination representing the media flow to/from the user involved in the interaction procedure. The ephemeral termination may already be in a context or may have to be created in a new context.

Signals representing tones and announcements are applied to this termination and played towards the exterior of the context. Events representing DTMF digits are detected on this termination.

ZB.4 Procedures for advanced user interaction

User Interaction procedures are applied to the ephemeral termination representing the media flow to/from the user involved in the interaction procedure. The ephemeral termination may already be in a context or may have to be created in a new context.

Signals representing tones and announcements are applied to this termination and played towards the exterior of the context.

Events representing DTMF digits or recognized speech segments are detected on this termination.

Voice-messaging services are implemented by applying the playrec signal from the AAS Recording package and detecting related event on this termination.

ZB.5 Procedures for conferencing

Conference services are implemented by creating H.248 contexts with the appropriate number of terminations using native H.248 mixing and transcoding capabilities. Each conference participant is represented by an ephemeral termination.

Floor control procedures are implemented according to the procedures described in H.248.19 (reference [11] in 3GPP TS 29.333).

ZB.6 Procedures for transcoding

The MRFP may be required to perform transcoding in the context of a conference setup or in the context of basic two party calls. This clause describes the procedures for controlling transcoding in case of a two party call. Procedures for controlling transcoding in conferences are described in clause ZB.5.

NOTE: Media Transcoding is performed by the MRFP under the control an MRFC. The criteria that trigger the insertion of an MRFC in the SIP signalling path is outside the scope of the present document.

On receipt of a transcoding request for a two-party session between A and B, the MRFC shall request the MRFP to create a context with one ephemeral termination representing the A party (Ta) and one ephemeral termination representing the B party (Tb).

Remote and Local Descriptors shall be populated as follows:

- The Remote Descriptor for termination Ta shall be set according to the SDP Offer initially received from the A party.
- The Remote Descriptor for termination Tb shall be set according to the SDP Answer received from the B party.
- The media format in the Local Descriptor for termination Ta shall be set according to the SDP Offer initially received from the A party. The IP address and port shall be wildcarded.
- The media format in the Local Descriptor for termination Tb shall be set according to the SDP Answer received from the B party. The IP address and port shall be wildcarded.

The value of the Local Descriptor returned by the MRFP for the termination Ta shall be sent as an SDP Answer to the A party (via the S-CSCF/AS).

The value of the Local Descriptor returned by the MRFP for the termination Tb shall be sent as a new SDP Offer to the B party (via the S-CSCF/AS).

The MRFC is responsible for sending the SDP information in SIP messages that are compatible with the state of the SIP dialogue.

History

Document history		
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