Technical Specification Group Services and System Aspects **TSGS#27(05)0099**
Meeting #27, Tokyo, Japan
14-17 March 2005

Source: TSG-SA WG4

Title: CRs TS 26.235 & TS 26.236 on Introduction of AMR SDP parameters and correction of reference (Releases 5 and 6)

Document for: Approval

Agenda Item: 7.4.3

The following CRs, agreed at the TSG-SA WG4 meeting #34, are presented to TSG SA #27 for approval.

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.236	014		Rel-5	Introduction of AMR SDP parameters	F	5.5.0	S4	TSG-SA WG4#34	S4-050224
26.236	015	1	Rel-6	Introduction of AMR SDP parameters	A	6.1.0	S4	TSG-SA WG4#34	S4-050225
26.235	013	1	Rel-6	Correction of reference	F	6.3.0	S4	TSG-SA WG4#34	S4-050226

3GPP TSG-SA WG4 Meeting #34 **S4-050224**
Lisbon, Portugal. 21st - 25th February 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **26.236** **CR** **014** ⌘ **rev** **1** ⌘ Current version: **5.5.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☒

Title:	⌘	Introduction of AMR SDP parameters
Source:	⌘	TSG SA WG4
Work item code:	⌘	AMRWB-IWG
Date:	⌘	16/02/2005
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
Ph2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*
Rel-7 *(Release 7)*

Reason for change:	⌘	Recent work on the bis draft of RFC 3267 (draft-ietf-avt-rtp-amr-bis-01.txt) has clarified the use of the SDP parameters for AMR. This needs to be reflected here. There is no discussion of the mode-set, mode-change-period or mode-change-neighbor parameters, and the usage of maxptime is not called out explicitly. These changes are consistent with recent CRs to 26.103, 23.153, 28.062 and 29.163 to correct AMR parameter usage.
Summary of change:	⌘	Text is added to explicitly describe the handling of all SDP parameters for AMR by both SDP offerers and SDP answerers.
Consequences if not approved:	⌘	The usage of these SDP parameters for AMR would be unspecified, likely causing problems with interoperability.

Clauses affected:	⌘	5.1, 5.1.1, 5.1.1.1, 5.1.1.2
Other specs affected:	⌘	Y N ☐ ☐ Other core specifications ☐ ☐ Test specifications ☐ ☐ O&M Specifications
	⌘	
Other comments:	⌘	The usage of the mode-change-capability parameter introduced by draft-ietf-avt-rtp-amr-bis-01.txt is not included in this CR. This will need to be incorporated when the draft reaches RFC status.

How to create CRs using this form:

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**********FIRST CHANGE**********

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] IETF RFC 3261: "SIP: Session Initiation Protocol".

[2] IETF RFC 2327: "SDP: Session Description Protocol".

[3] IETF RFC 3550: "RTP: A Transport Protocol for Real-Time Applications", Schulzrinne H. et al, July 2003.

[4] IETF RFC 3551: "RTP Profile for Audio and Video Conferences with Minimal Control", Schulzrinne H. and Casner S., July 2003.

[5] 3GPP TS 26.235: "Packet switched conversational multimedia applications; Default codecs".

[6] 3GPP TS 24.228: "Signalling flows for the IP multimedia call control based on SIP and SDP; stage 3".

[7] 3GPP TS 24.229: "IP multimedia call control protocol based on SIP and SDP".

[8] 3GPP TS 23.228: "IP Multimedia Ssubsystem (IMS); Stage 2".

[9] 3GPP TS 23.107: "Quality of Service (QoS) concept and architecture".

[10] 3GPP TS 23.207: "End to end quality of service concept and architecture".

[11] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".

[12] 3GPP TS 26.071: "Mandatory Speech Codec speech processing functions; AMR Speech Codec; General description".

[13] 3GPP TS 26.090: "AMR speech Codec; Transcoding Functions".

[14] 3GPP TS 26.073: "AMR speech Codec; C-source code".

[15] 3GPP TS 26.104: "ANSI-C code for the floating-point Adaptive Multi-Rate AMR speech codec".

[16] 3GPP TS 26.171 (Release 5): "AMR speech codec, wideband; General description".

[17] 3GPP TS 26.190 (Release 5): "Mandatory Speech Codec speech processing functions AMR Wideband speech codec; Transcoding functions".

[18] 3GPP TS 26.201 (Release 5): "AMR speech codec, wideband; Frame structure".

[19] 3GPP TS 26.235: "Packet switched conversational multimedia applications; Default codecs ". Annex B: "RTP payload format and storage format for AMR and AMR-WB audio".

[20] ITU-T Recommendation H.263: "Video coding for low bit rate communication".

[21] IETF RFC 2429: "RTP Payload Format for the 1998 Version of ITU-T Rec. H.263 Video (H.263+)".

[22] ISO/IEC 14496-2 (1999): "Information technology - Coding of audio-visual objects - Part 2: Visual".

[23] IETF RFC 3016: "RTP Payload Format for MPEG-4 Audio/Visual Streams".

[24] ITU-T Recommendation H.263 (annex X): "Annex X: Profiles and levels definition".

[25] 3GPP TS 26.235: "Packet Switched Conversational Multimedia Applications; Default Codecs ". Annex C: "ITU-T H.263 MIME media type registration".

[26] ITU-T Recommendation T.140 (1998): "Protocol for multimedia application text conversation" (with amendment 2000).

[27] IETF RFC 2793: "RTP Payload for Text Conversation".

[28] IETF RFC 3556: "Session Description Protocol (SDP) Bandwidth Modifiers for RTP Control Protocol (RTCP) bandwidth", Casner S., July 2003.

[29] IETF RFC 3267: "RTP payload format and file storage format for the Adaptive Multi-Rate (AMR) Adaptive Multi-Rate Wideband (AMR-WB) audio codecs", March 2002.

[30] 3GPP TS 26.103: "Speech codec list for GSM and UMTS".

**********LAST CHANGE**********

5 Media type requirements

Media type RTP payload usage is specified in this clause. The media types and corresponding codecs are specified in 3GPP TS 26.235 [5]. The continuous media type RTP payloads are mapped to RTP packets according to IETF RTP Profile for Audio and Video Conferences with Minimal Control in RFC 3551 [4].

5.1 Audio

The IETF AMR and AMR-WB RTP payload format [29] offers different options. Subclause 5.1.1 describes the use of those options for 3G PS endpoints.

5.1.1 RTP session description parameters

~~The IETF AMR and AMR-WB RTP payload format [19] offers different options. Here is the list of options and how they should be used by the transmitter. The receiver shall at least support the options as they are listed:~~ The behaviour of the transmitter is defined below:

- the bandwidth efficient operation shall be used,
- codec mode changes shall be performed in integer multiples of 40 msec,
- codec mode changes should be performed to neighboring modes of the selected combination of codec modes,
- DTX signaling may be used,
- only one speech frame shall be encapsulated in each RTP packet,
- the multi-channel session shall not be used,
- interleaving shall not be used, and
- internal CRC shall not be used.

The behaviour of the receiver is defined below:

- the bandwidth efficient operation shall be used,
- codec mode changes shall be accepted at any time;
- codec mode changes shall be accepted to any supported mode of the selected combination of codec modes and
- DTX signaling shall always be accepted,
- only one speech frame shall be encapsulated in each RTP packet,
- the multi-channel session shall not be used,
- interleaving shall not be used, and
- internal CRC shall not be used.

5.1.1.1 Parameter usage in an SDP offer

When using SDP to signal the use of the AMR or AMR-WB payload format, a 3G PS endpoint shall include the following SDP parameters in an SDP offer:

- mode-change-period=2
- maxptime: 20

Unless a 3G PS endpoint can support all possible configurations (= combinations of codec modes) for the codec, it should include in the SDP offer a separate payload type with a mode-set parameter for each configuration it can support.

A 3G PS endpoint should support one or more “preferred configurations” for the codec, as defined in 3GPP TS 26.103 [30].

A 3G PS endpoint should not include in an SDP offer any configuration that contains all but the highest codec mode(s) of another included configuration; the endpoint can support this configuration with the use of rate control to force the use of only the supported modes.

5.1.1.2 Construction of an SDP answer

When using SDP to signal the use of the AMR or AMR-WB payload format, a 3G PS endpoint performs all of the following procedures when constructing an SDP answer from a received SDP offer:

- An SDP answerer should select for a payload type in an SDP answer from a payload type in an SDP offer with the following parameters:
  - octet-align=0 or no octet-align parameter;
  - maxptime:20;
  - crc=0 or no crc parameter;
  - no interleaving parameter and
  - channels=1 or no channels parameter.
  - robust-sorting=0

- The SDP answer shall include the following parameters without change from the selected payload type of the SDP offer:
  - octet-align;

- maxptime;
- crc;
- interleaving and
- channels.

- An SDP answerer should select from among payload types in the SDP offer regardless of the presence of the "mode-change-period=2" or "mode-change-neighbor=1" parameters. The SDP answer need not include either parameter.
- If there is no mode-set parameter for a payload type in an SDP offer, the SDP answerer may select any supported mode-set.
- When an SDP offer includes (different) mode-set parameter(s) in one or more payload types, the SDP answerer may select from among any supported mode-set in the SDP offer, including those mode-sets that can be supported with rate control. The mode-set in the SDP answer shall be identical to the mode-set selected from the SDP offer. The SDP answerer shall apply rate control immediately if necessary to limit the use of higher codec modes.

3GPP TSG-SA WG4 Meeting #34 **S4-050225**
Lisbon, Portugal. 21st - 25th February 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **26.236** **CR** **015** ⌘ **rev** **1** ⌘ Current version: **6.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☒

Title:	⌘	Introduction of AMR SDP parameters
Source:	⌘	TSG SA WG4
Work item code:	⌘	AMRWB-IWG
Date:	⌘	15/03/2005
Category:	⌘	**A**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
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Reason for change:	⌘	Recent work on the bis draft of RFC 3267 (draft-ietf-avt-rtp-amr-bis-01.txt) has clarified the use of the SDP parameters for AMR. This needs to be reflected here. There is no discussion of the mode-set, mode-change-period or mode-change-neighbor parameters, and the usage of maxptime is not called out explicitly. These changes are consistent with recent CRs to 26.103, 23.153, 28.062 and 29.163 to correct AMR parameter usage.
Summary of change:	⌘	Text is added to explicitly describe the handling of all SDP parameters for AMR by both SDP offerers and SDP answerers.
Consequences if not approved:	⌘	The usage of these SDP parameters for AMR would be unspecified, likely causing problems with interoperability.

Clauses affected:	⌘	5.1, 5.1.1, 5.1.1.1, 5.1.1.2
Other specs affected:	⌘	Y N ☐ ☐ Other core specifications ☐ ☐ Test specifications ☐ ☐ O&M Specifications
	⌘	
Other comments:	⌘	The usage of the mode-change-capability parameter introduced by draft-ietf-avt-rtp-amr-bis-01.txt is not included in this CR. This will need to be incorporated when the draft reaches RFC status.

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[23] IETF RFC 3016: "RTP Payload Format for MPEG-4 Audio/Visual Streams".

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[28] IETF RFC 3556: "Session Description Protocol (SDP) Bandwidth Modifiers for RTP Control Protocol (RTCP) bandwidth", Casner S., July 2003.

[29] RTP Payload Formats for European Telecommunications Standards Institute (ETSI) European Standard ES 202 050, ES 202 211, and ES 202 212 Distributed Speech Recognition Encoding draft-ietf-avt-rtp-dsr-codecs-00.txt.

[30] Open Mobile Alliance: “PoC User Plane Version 1, Draft Version 1.0.10 Nov 2004”, OMA-UP-PoC-V1_0_10-20041103-D.

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

[31] 3GPP TS 26.103: "Speech codec list for GSM and UMTS".

**********LAST CHANGE**********

5 Media type requirements

Media type RTP payload usage is specified in this clause. The media types and corresponding codecs are specified in 3GPP TS 26.235 [5]. The continuous media type RTP payloads are mapped to RTP packets according to IETF RTP Profile for Audio and Video Conferences with Minimal Control in RFC 3551 [4].

5.1 Audio

The IETF AMR and AMR-WB RTP payload format [19] offers different options. Subclause 5.1.1 describes the use of those options for 3G PS endpoints. Subclause 5.1.2 describes the usage for PoC.

5.1.1 RTP session description parameters

~~The IETF AMR and AMR-WB RTP payload format [19] offers different options. Here is the list of options and how they should be used by the transmitter. The receiver shall at least support the options as they are listed (for PoC please see below) :~~ The behaviour of the transmitter is defined below:

- the bandwidth efficient operation shall be used,
- codec mode changes shall be performed in integer multiples of 40 msec,
- codec mode changes should be performed to neighboring modes of the selected combination of codec modes,
- DTX signalling may be used

- only one speech frame shall be encapsulated in each RTP packet,
- the multi-channel session shall not be used,
- interleaving shall not be used, and
- internal CRC shall not be used.

The behaviour of the receiver is defined below:

- the bandwidth efficient operation shall be used,
- codec mode changes shall be accepted at any time,
- codec mode changes shall be accepted to any supported mode of the selected combination of codec modes and
- DTX signaling shall always be accepted,
- only one speech frame shall be encapsulated in each RTP packet,
- the multi-channel session shall not be used,
- interleaving shall not be used, and
- internal CRC shall not be used.

5.1.1.1 Parameter usage in an SDP offer

When using SDP to signal the use of the AMR or AMR-WB payload format, a 3G PS endpoint shall include the following SDP parameters in an SDP offer:

- mode-change-period=2
- maxptime: 20

Unless a 3G PS endpoint can support all possible configurations (= combinations of codec modes) for the codec, it should include in the SDP offer a separate payload type with a mode-set parameter for each configuration it can support.

A 3G PS endpoint should support one or more “preferred configurations” for the codec, as defined in 3GPP TS 26.103 [31].

A 3G PS endpoint should not include in an SDP offer any configuration that contains all but the highest codec mode(s) of another included configuration; the endpoint can support this configuration with the use of rate control to force the use of only the supported modes.

5.1.1.2 Construction of an SDP answer

When using SDP to signal the use of the AMR or AMR-WB payload format, a 3G PS endpoint performs all of the following procedures when constructing an SDP answer from a received SDP offer:

- An SDP answerer should select for a payload type in an SDP answer from a payload type in an SDP offer with the following parameters:
  - octet-align=0 or no octet-align parameter;
  - maxptime:20;
  - crc=0 or no crc parameter;
  - no interleaving parameter and
  - channels=1 or no channels parameter.

- robust-sorting=0

- The SDP answer shall include the following parameters without change from the selected payload type of the SDP offer:
  - octet-align;
  - maxptime;
  - crc;
  - interleaving and
  - channels.
- An SDP answerer should select from among payload types in the SDP offer regardless of the presence of the "mode-change-period=2" or "mode-change-neighbor=1" parameters. The SDP answer need not include either parameter.
- If there is no mode-set parameter for a payload type in an SDP offer, the SDP answerer may select any supported mode-set.
- When an SDP offer includes (different) mode-set parameter(s) in one or more payload types, the SDP answerer may select from among any supported mode-set in the SDP offer, including those mode-sets that can be supported with rate control. The mode-set in the SDP answer shall be identical to the mode-set selected from the SDP offer. The SDP answerer shall apply rate control immediately if necessary to limit the use of higher codec modes.

5.1.2 RTP session description parameters for PoC

For PoC services less restrictive IETF AMR and AMR-WB RTP payload format [19] options apply:

- the multi-channel session shall not be used,
- internal CRC shall not be used,
- the number of speech frames encapsulated in each RTP packet should not exceed 20,
- interleaving should not be used.
- the total packetization delay (including any interleaving delay) shall not exceed 500ms.

3GPP TSG-SA WG4 Meeting #34
Lisbon, Portugal, 21-25 February 2005

Tdoc ⌘S4-050226

CR-Form-v7.1

CHANGE REQUEST

⌘ **26.235** **CR** **013** ⌘**rev** **1** ⌘ Current version: **6.3.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction of reference
Source:	⌘	TSG SA WG4
Work item code:	⌘	TEI6
Date:	⌘	15/03/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
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Rel-5 *(Release 5)*
Rel-6 *(Release 6)*
Rel-7 *(Release 7)*

Reason for change:	⌘	Other Release-6 specifications has a reference to new RTP IETF RFC 3550 but this TS has still a reference to old RTP IETF RFC 1889.
Summary of change:	⌘	Change reference [4] to point to IETF RFC 3550.
Consequences if not approved:	⌘	If not approved, the reference inconsistency will remain.

Clauses affected:	⌘				
Other specs affected:	⌘	**Y**	**N**		⌘
			X	Other core specifications	
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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(cut text)

2 References

(cut text)

[3] IETF RFC 2429: "RTP Payload Format for the 1998 Version of ITU-T Rec. H.263 Video (H.263+)".

[4] IETF RFC ~~1889~~3550: "RTP: A Transport Protocol for Real-Time Applications", Schulzrinne H. et al, July 2003.

[5] IETF RFC 3016: "RTP Payload Format for MPEG-4 Audio/Visual Streams".

(cut text)