Technical Specification Group Services and System Aspects **TSGS#28(05)0249**
Meeting #28, Quebec, Canada
6-9 June 2005

Source: TSG-SA WG4

Title: CRs TS 26.236 on Clarification to the Introduction of AMR SDP parameters (Releases 5 and 6)

Document for: Approval

Agenda Item: 7.4.3

The following CRs, agreed at the TSG-SA WG4 meeting #35, are presented to TSG SA #28 for approval.

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.236	016	1	Rel-5	Clarification to the Introduction of AMR SDP parameters	F	5.6.0	S4	TSG-SA WG4#35	S4-050425
26.236	017	1	Rel-6	Clarification to the Introduction of AMR SDP parameters	A	6.2.0	S4	TSG-SA WG4#35	S4-050426

3GPP TSG-SA WG4 Meeting #35 ***Tdoc ⌘SA-050425***

San Diego, USA. 9th - 13th May 2005.

CR-Form-v7.1

CHANGE REQUEST

⌘ **26.236** **CR** **016** ⌘**rev** **1** ⌘ Current version: **5.6.0** ⌘

*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:	⌘	Clarification to the `Introduction of AMR SDP parameters`
Source:	⌘	TSG SA WG4 Codec
Work item code:	⌘	AMRWB-IWG
Date:	⌘	06/06/2005
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 new development should be reflected in 23.236 consistently. CR014 against 23.236 has started the first step. In this change request some clarifications and modifications on the receiver behavior are introduced to maximize the interoperability. Redundant requirement on the absence of inter-leaving and internal CRC in case of bandwidth efficient mode is removed. Also wordings in some places are reordered in favor of clarity**. The corrections are essential**. They are consistent with recent CRs to 26.103, 23.153, 28.062 and 29.163 and to correct AMR parameter usage.
Summary of change:	⌘	The receiver behaviour is clarified and slightly extended to allow for better interoperability.
Consequences if not approved:	⌘	Insufficient interoperability between 3GPP PS endpoint and other endpoints for SDP with AMR application according to RFC 3267

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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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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 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.
- simple payload sorting shall be used

The behaviour of the receiver is defined below:

- the bandwidth efficient operation shall be ~~used~~supported,
- 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~~ the receiver shall accept one speech frame ~~shall be~~ encapsulated in each RTP packet,
- the receiver shall accept a ~~multi~~single-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 parameter~~s~~ in an SDP offer:

~~mode-change-period=2~~

- maxptime: 20

When using SDP to signal the use of the AMR or AMR-WB payload format with two or more modes in the mode-set, a 3G PS endpoint shall also include the following SDP parameter in an SDP offer:

- mode-change-period=2

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;
  - robust-sorting=0 or no robust-sorting 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;
  - robust-sorting;
  - 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 #35 ***Tdoc ⌘SA-050426***

San Diego, USA. 9th - 13th May 2005.

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Date:	⌘	06/06/2005
Category:	⌘	**A**
Release:	⌘	Rel-6

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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. Subclause 5.1.2 describes the usage for PoC.

5.1.1 RTP session description parameters

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.
- simple payload sorting shall be used

The behaviour of the receiver is defined below:

- the bandwidth efficient operation shall be ~~used~~supported,
- 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~~ the receiver shall accept one speech frame ~~shall be~~ encapsulated in each RTP packet,
- the receiver shall accept a ~~multi~~single-channel session ~~shall not be used~~,

~~interleaving shall not be used, and~~

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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 parameter~~s~~ in an SDP offer:

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When using SDP to signal the use of the AMR or AMR-WB payload format with two or more modes in the mode-set, a 3G PS endpoint shall also include the following SDP parameter in an SDP offer:

- mode-change-period=2

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.

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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;
    - robust-sorting=0 or no robust-sorting 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;
    - robust-sorting;
    - 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.