Updating the RTP payload format for AMR and AMR-WB

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Outline

- Goals
- RFC 3267 Shortcomings
- Proposal
- Interoperability Testing
- Way Forward

Goals

- Move to draft standard with update specification.
  - Correct errors and shortcomings in RFC 3267
  - Gather interoperability report

Shortcomings and Errors

- A few editorial errors in RFC 3267 as erroneous section references.
- A few section where language can be improved.
- Media type parameters for gateways are unclear.
- Missing Offer/Answer section.

Changes 1/2

- Added clarification what behaviour in regards to mode change period and mode-change neighbour that is expected from an IP client, see Section 4.5.
- Updated the maxptime for clarification. The sentence that previously read: "The time SHOULD be a multiple of the frame size." do now read "The time SHOULD be an integer multiple of the frame size. This should have no impact on interoperability.
- Updated the definition of the mode-set parameter for clarification.
- Clarified the bit-order in the CRC calculation in Section 4.4.2.1.
- Corrected the reference in Section 5.3 for the Q and FT fields.

Changes 2/2

- Changed the padding bit definition in Section 5.3 so that it is clear that they shall be ignored.
- Added a clarification that Comfort Noise frames with frame type 9, 10 and 11 SHALL NOT be used in the AMR file format.
- Clarified in Section 4.3.2 that the rules about not sending NO_DATA frames do apply for all payload format configurations with the exception of the interleaved mode.
- The reference list has been updated to now published RFCs: RFC 3711, RFC 3828, RFC 3550, and RFC 3551. A reference to 3GPP TS 26.101 has also been added. The previous reference [17] has been replaced by RFC 3448 (TFRC).

Offer / Answer Section

- Draft contains a new Offer-Answer Section, see Section 8.3.1.
- However that section has been discussed in private and it is clear it needs updates.
- There are issues with the gateway related parameters: mode-set, mode-change-period and mode-change neighbour.
- Mode-set needs to indicate bi-directional capabilities. This depending on the Codec Mode Request field where the requester should know which modes that are meaningful to request.

Offer / Answer Section

- The mode-change-period is needed to be know as both receiving and sending capabilities.
- GSM and UTMS circuit switched network has three different combinations supported:
  - FR_AMR: Sends MCP=2 and must receive MCP=2
  - UMTS_AMR: Sends MCP=1 and receives MCP=1
  - UMTS_AMR2: Sends MCP=2 and receives MCP=1
- IP clients are assumed to behave as UMTS_AMR.

Offer / Answer Section

- A expected interpretation of the mode-change-period parameter is that it is declarative and describes receivers requirements.
- To avoid changing this for minimal issues with deployed base, a new parameter (mode-change-capabilities) is proposed. It expresses the sending capabilities of the offerer or answerer and is also declarative. Lack of the parameter is MCP=1
- We also propose to restrict MCP and MCC to only allow values 1 and 2 of change period.

Offer / Answer Section

- The combination of MCP and MCC allows the participants to determine if the call is going to work or not.
- To get certain combinations to work, transcoders is needed, or call failure will happen. A second payload type with less preference can be used to indicate support for transcoding.
- IP clients are strongly encourage to support sending MCP=2 to interoperate with gateways.

Offer / Answer Section

- Mode-change-neighbour is proposed to be changed to being only a indication, and not something you must support. The reason is that is usually work, even if MCN is not supported.
- Is is recommended that a IP client supports sending with mode-changes only to nearest neighbour.
- Changes will affect both Offer/Answer section and parameter definitions.

Interoperability Testing

- Ericsson and Nokia has performed tests of around 50% of the combinations between:
  - Bandwidth efficient or Octet Align
  - CRC
  - Interleaving
  - Robust sorting
  - Channels
- Help with signalling part, implementation and testing reports from SIP clients having offer / answer support for AMR and AMR-WB is desired.

Way Forward

- The draft will be updated to reflect proposal
- Hopefully interoperability reports can be gathered quite quickly. However the offer / answer procedures must be tested.
- If not, the way forward may be to publish the updated specification as proposed standard.