

RTCP XR Block for Concealed Seconds metric Reporting

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Document Status

- Document (-00) was adopted as XRBLOCK WG document before Vancouver meeting
- (-01)(-02) version was submitted in October to address
 - Comments that were raised to PDV draft but applied to this document as well.
 - Outdated Reference updating.
 - Some typo to be fixed.
- Many thanks to
 - Claire Bi for reviewing
 - Alan Clark for clarification
- Some open issues remain.
 - The meaning of Enhanced
 - How to support Video Loss Concealment?

Issue # Enhanced Meaning ambiguity

- In the packet loss concealment methods, "Enhanced" is defines as one new Packet loss Concealment method?
- However it is not clear what this packet loss concealment method looks like?
 - Does 'Enhanced' mean combination of 'simply replay with attenuation' and 'simply reply without attenuation'?
 - Does 'Enhanced' mean combination of 'simply replay without attenuation' and silence insertion?

Issue # Video Loss Concealment support

Editor's Note 2: For Video loss concealment, there are a range of methods used, for example:

(i) Frame freeze In this case the impaired video frame is not displayed and the previously displayed frame is hence "frozen" for the duration of the loss event

(ii) Inter-frame extrapolation If an area of the video frame is damaged by loss, the same area from the previous frame(s) can be used to estimate what the missing pixels would have been. This can work well in a scene with no motion but can be very noticeable if there is significant movement from one frame to another. Simple decoders may simply re-use the pixels that were in the missing area, more complex decoders may try to use several frames to do a more complex extrapolation.

(iii) Interpolation A decoder may use the undamaged pixels in the image to estimate what the missing block of image should have

(iv) Noise insertion A decoder may insert random pixel values - which would generally be less noticeable than a blank rectangle in the image.

It will be useful in the future draft
To discuss techniques for video
Loss concealment?

Propose change:

1. Add frame freeze, inter-frame Extrapolation, interpolation, Noise Insertion as four packet loss concealment Methods for video
2. Add frame freeze, inter-frame extrapolation, interpolation, Noise Insertion as four terms in the terminology section

Issue # Video Loss Concealment support

- In this document, two kind of concealments are defined:

Loss-type concealment is reactive insertion or deletion of samples in the audio playout stream due to effective frame loss at the audio decoder.

Buffer Adjustment-type concealment is proactive or controlled insertion or deletion of samples in the audio playout stream due to jitter buffer adaptation, re-sizing or re-centering decisions within the endpoint.

- Concealment Loss-type concealment is applicable to both audio and video. However the current description of Buffer Adjustment-type concealment is only applied to audio.
 - For Video, playout buffer can be resized by either temporarily adjust frame rate or freezing/skipping frame

- Proposed change to definitions of these two kind of concealments:

Loss-type concealment is reactive insertion or deletion of samples in the media playout stream due to effective frame loss at the media decoder.

Buffer Adjustment-type concealment is proactive or controlled insertion or deletion of samples in the audio playout stream or proactive adjusting frame rate or skipping/freezing frame in the video playout stream due to jitter buffer adaptation, re-sizing or re-centering decisions within the endpoint.

Observation

- Concealed Seconds metrics are primarily applicable to audio applications of RTP. For video applications, these metrics also apply.
- For video, primarily we may rely on RTP based retransmission and also FEC (e.g. COP3) to compensate the video loss and deal with less delay sensitive application like IPTV.
- Video loss concealment method is quite different from audio loss concealment method.
- Support video loss concealment may need more work, shall we separate it as another draft or are people comfortable to take on this in this document?

Follow Up

- Address the open issues and submit new version.