RTCP Report Extension for Feedback Suppression

draft-wu-avt-retransmission-suppression-rtp-06

Qin Wu
Frank Xia
Roni Even
Status

• Submitted before IETF 77, Anaheim, drew some discussion on the list
• Presented in the IETF 78, Masstricht, rough consensus to support this work
• Changes since -02
  – Change the title to “RTCP Report Extension for Feedback Suppression”
  – Restructure the document with Dave Oran Help focusing on generic mechanism for Feedback suppression by defining new RTCP message dealing with Feedback Implosion including Retransmission implosion.
  – Discuss how Feedback Suppression work in various use cases described in RFC5117 and in RAMS case.
  – Keep the retransmission part as non normative text
  – Take out the use case of using dedicated Loss reporter for packet loss.
  – Simplify the abstract and introduction.
  – Remove the appendix.
Issues addressed

• Issue 1: why NOT use RTCP NACK FB to address Retransmission Suppression
  – Discussed in Maastricht with the conclusion to use a new message but was not captured in the meeting notes.
  – NACK does not define any semantics when sent from the server to the client.
  – Version 06 specifies the new message and how it is used in two use cases:
    • Retransmission suppression
    • Video fast update suppression

• Issue 2: Should feedback suppression be used when FEC is available.
  – Clarification: when FEC is used, Feedback Suppression message can be sent indicating to the receiver that packets were lost enabling early usage of FEC.
Issues Addressed

• Issue 3: Ambiguous definition of loss detector and how it is used for suppression
  – Version 06 removed the loss detector definition from section 2 and removed the concept of using separate dedicated loss detectors in all the other sections.
  – Focus only on the case of using the middlebox to detects loss in the upstream direction.

• Issue 4: How to handle the case wherein loss detection functionality see different loss
  – This was relevant to the loss detector case which was removed from the document.
Issues addressed

• Issue 5: Why send unicast suppression message to the receiver in video switching MCU case?
  – Packet loss of video frames may cause all receiving terminal to ask for video fast update. The use of the suppression message can prevent them from sending fast update requests.

• Issue 6: How suppression mechanism works for the different RTP topologies
  – Version 6 adds MCU case, Translator case and RAMS case in section 6 of the draft.
Open Issue

- Is there need for a "announcement" in the SDP support for Feedback suppression.
  - Currently in the draft. This is an announcement from the sender. Not sure if there is value in this announcement.
  - Comments and suggestion?
Next Step

- Request to accept draft as WG item
  - Had support in IETF 78 and on the list.
Use cases for Feedback Implosion

• Problem Statement
  – packet loss close to the media source or intermediary of the session is detected as a loss by a large number of receivers
  – large number of feedback requests used to ask for the lost RTP packets are all addressed to the same media source, or a designated feedback target
  – Result in Feedback Implosion or Feedback Storm

• Example use cases
  – Source Specific Multicast (SSM) Use Case
  – RTP Transport Translator Use Case
  – Multipoint Control Unit (MCU) Use Case
  – Unicast based Rapid Acquisition of multicast stream (RAMS) Use Case
Solution for Feedback Implosion

• Specifies an extension to the RTCP feedback messages used for feedback suppression

• This extension allows an intermediate node in the network (such as an distribution source) or media source inform downstream receivers that packet loss was detected and sending a feedback message concerning a specified set of RTP packets may be unnecessary, or even harmful.
How Feedback Suppression works

• On the Server (Source or Intermediary)
  – monitor for packet loss upstream of themselves just as receivers do.
  – Upon detecting an upstream loss, the intermediary may create and send Feedback Suppression message towards the receivers as defined in this specification.
  – Alternatively, the media source may directly monitor the amount of feedback requests it receives, and send feedback suppression messages to the receivers.
  – Intermediaries downstream of an intermediary may either simply forward the Feedback Suppression message received from upstream, or augment it with a feedback suppression message that reflects the loss pattern they have themselves seen.
  – Intermediaries downstream of an intermediary should not initiate their own additional feedback suppression messages for the same packet sequence numbers.

• On the Client
  – If the receivers understand feedback suppression message, the receivers should not themselves transmit feedback messages upon receiving Feedback suppression
  – A receiver may still have sent a Feedback message before receiving a feedback suppression message, but further feedback messages for those sequence numbers will be suppressed by this technique.
  – The receiver may send feedback messages if it did not understand this new message.