Non-compound RTCP

IETF-70 Vancouver

draft-ietf-avt-rtcp-non-compound-01

(Backup link to draft: http://www1.ietf.org/mail-archive/web/avt/current/msg08975.html)

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TAKING YOU FORWARD

Non-compound RTCP

- Definition
- Use cases
- Bandwidth computation
- ”Allow immediate flag”
- For further study

Definition

- Compound RTCP
  - Contains (as a minimum) the parts
    - SR or (RR)
    - SDES CNAME item
  - Can become quite bulky
- Non-compound RTCP
  - Does not fulfil the minimum compound requirements above
  - Small sized packets gives benefits
    - Mentioned in earlier presentations..
  - Some issues need to be resolved.

Use cases

- Codec control signaling
  - TMMBR/TMMBN
  - 3GPP release 7 TS26.114 section 10.2
- Feedback
  - Video with generic NACK
  - TFRC for RTP
- Some maybe more controversial use cases
  - Control plane signaling
    - OMA PoC
    - Standards specific
  - Status reports, split compound reports.
    - Potential issues mentioned in draft
      - May open up for incompatibility issues
      - Middleboxes or 3rd part network monitoring equipment may fail to understand (or discard) the new reports.
      - Extensive verification mechanisms may be needed.
    - ”OK to do but beware”, ”Please don’t” or ”Don’t you dare!” ?
  - IETF opinion ?

Bandwidth computation

- Compound and non-compound RTCP are treated differently
- How distinguish between a compound and a non-compound RTCP ?
  - Size threshold...
    - set in specification
      - A minimal compound RTCP (RR + SDES(CNAME)) can (in theory) have a size of 48 bytes (+IP/UDP)
    - set at session setup
      - Dependent on usage (RTCP, RTCP-XR...)
    - determined ”on the fly”
      - All packets that don’t follow the ”compound” rules are used to determine size threshold.
  - Payload type number(s), a minimal compound RTCP contains at least the combination RR+SDES or SR+SDES
    - Does not really tell anything about the size.

Bandwidth computation

- avg_rtcp_size = The average size of the compound RTCP
- avg_rtcp_size_ncp = The average size of the non-compound RTCP
- Transmission bandwith for non-compound RTCP is guaranteed by
  - ”trr-int” attribute in relation to RTCP BW
    - trr-int = 5s, RTCP BW = 1000bps , 2 members: ~1000-150*8/5 = 760bps for non-compound RTCP.
  - Optional ”ncp-share” attribute
    - Allocates atleast a fixed part for non-compound RTCP.

Bandwidth computation

- Benefits
  - More stable avg_rtcp_size
  - Easy to allocate bandwidth between compound and non-compound RTCP
  - No over utilization of RTCP BW
- Issue
  - Does not automatically give the possibility for fast timely feedback
    - Depends on setting of RTCP-BW and ”trr-int” or ”ncp-share”.

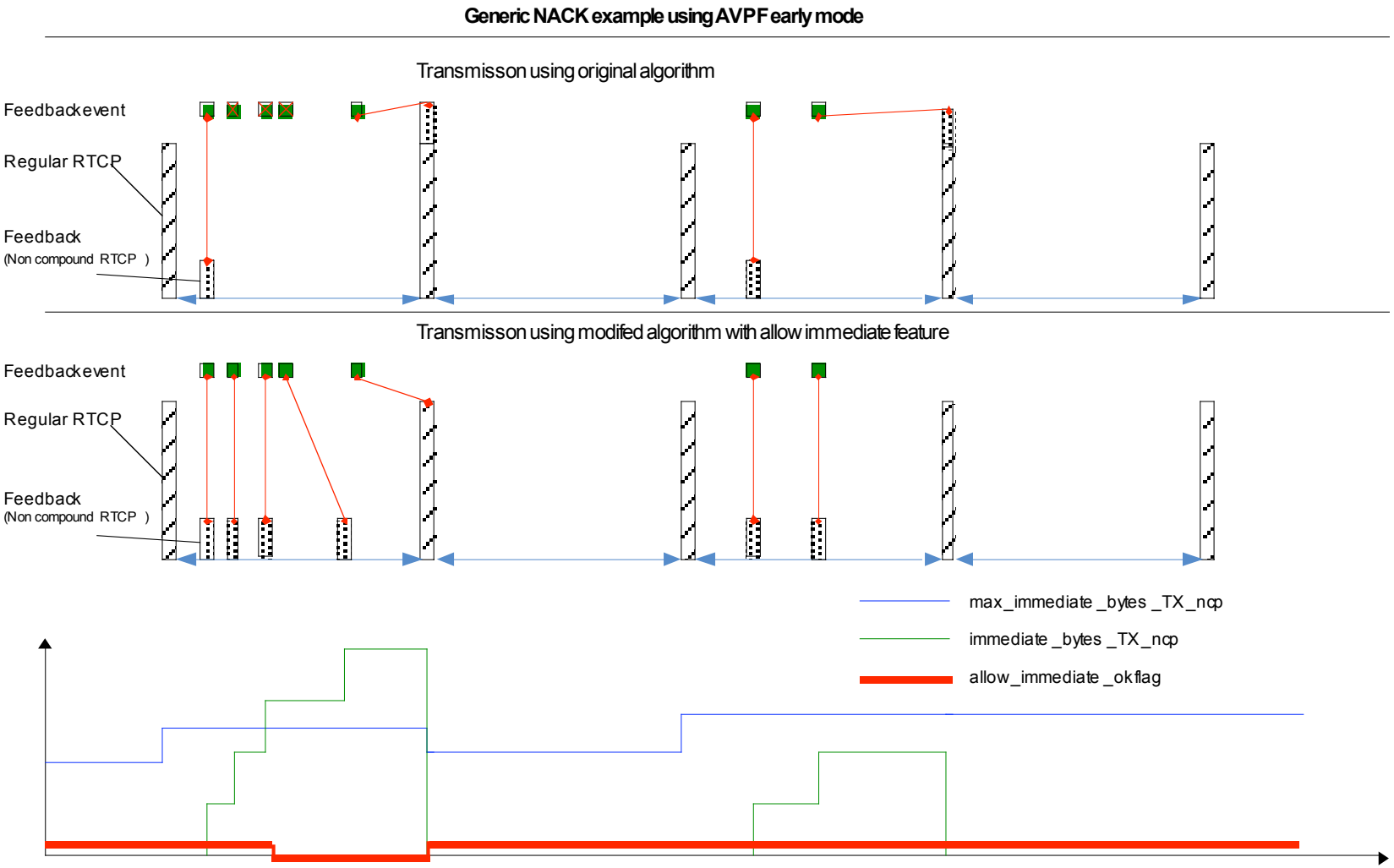
Allow immediate flag

- Bandwidth modification ensures that the RTCP bandwidth is not over-utilized
- RTCP-BW is under-utilized when use of non-compound RTCP is sparse
  - Codec control signaling or eg. Generic NACK

Allow immediate flag

- Allow immediate transmission of non-compound RTCP as long as RTCP bandwidth measured over a given time interval is below the limit.
  - Time interval is typically the timespan between regular (compound) RTCP.
- Flag *allow_immediate_ncp_ok* TRUE as long as number of transmitted non-compound RTCP bytes below threshold determined by available free RTCP bandwith.
- Initial simulations promising
  - Allows for considerably faster feedback.

Allow immediate flag



For further study (still plenty left...)

- Varying RTCP size
  - Esp. compound RTCP might vary a lot in size
- Number of members
  - Session size may vary
- Very high bitrates
  - Simulations needed.
- Feedback suppression
  - The use of allow_immediate_ncp_ok may lead to feedback implosion for large groups
- Feedback flooding
  - No limit how fast non-compound RTCP can be transmitted when allow_immedia_ncp_ok == TRUE
- General mapping to rules in RFC4585
- Dynamic allocation between compound and non-compound RTCP ?
- SRTCP issues.
  - Relation to reqirement in RFC3711
    ”According to Section 6.1 of [RFC3550], there is a REQUIRED packet format for compound packets. SRTCP MUST be given packets according to that requirement in the sense that the first part MUST be a sender report or a receiver report.”