

TCP ACK Rate Request (TARR) option

draft-ietf-tcpm-ack-rate-request-05

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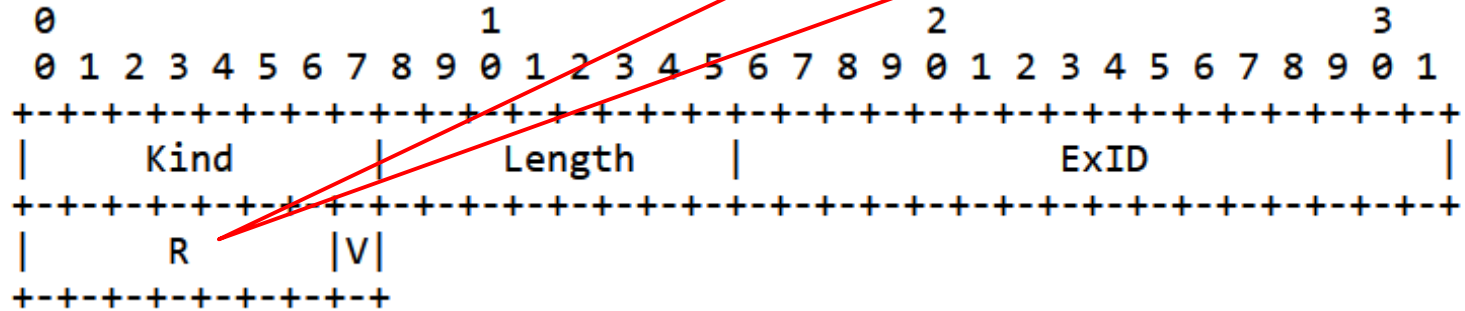
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Intro: motivation

- Delayed ACKs
 - Intended to reduce protocol overhead
 - But may also contribute to suboptimal performance
- “Large” cwnd scenarios (i.e. $cwnd \gg MSS$):
 - Saving more than 1 of every 2 ACKs may improve performance
- “Small” cwnd scenarios (i.e. cwnd up to ~ 1 MSS):
 - Delayed ACKs may incur delay, limit cwnd growth...

Intro: main TARR option format

- R carries binary encoding of ACK rate
- Maximum value of R: 127



- “R” is the ACK rate requested by the sender
 - R = 0: request an immediate ACK (but keep steady state R)

Status

- WG adoption
 - draft-ietf-tcpm-ack-rate-request-00
 - Same content as draft-gomez-tcpm-ack-rate-request-06
 - February 2023
- Version -05
 - Aims to address comments from IETF 119
 - Main comment:
 - Are we going to make something in the network very unhappy (due to TARR)?
 - In the presence of elements that aim to modify the ACK rate

Updates (I/III)

- Appendix C. Impact of TARR in the presence of elements that modify the ACK rate
 - ACK filtering
 - Several ACKs stored in the queue, older ones may be removed
 - Despite TARR, there will still be one ACK per cwnd of data
 - ACK decimation
 - ACKs are dropped (less control of which ones)
 - May drop all ACKs that correspond to a cwnd of data, producing retransmission timer expiration
 - TARR (with $R > 2$) may contribute to this problem
 - Proposed solution: upon retransmission timer expiration, sender requests the receiver to revert to Delayed ACKs in that case

Updates (II/II)

- Appendix C. Impact of TARR in the presence of elements that modify the ACK rate
 - Receiver-side aggregation (e.g., LRO) may reduce the number of ACKs
 - In this case, TARR ($R > 2$) may
 - Further reduce the number of ACKs
 - Contribute to the same problem of not eliciting at least one ACK per cwnd of data, leading to retransmission timer expiration
 - Same proposed solution: sender requests the receiver to revert to Delayed ACKs in that case

Updates (III/III)

- Section 3.1. Sender behavior:
 - When the sender knows that the receiver is TARR-capable
 - And the last ACK rate requested is $R > 2$
 - Upon RTO expiration, the segment carrying retransmitted data MUST carry a TARR option with $R=2$
- This measure requests the receiver to revert to Delayed ACKs

Thanks!

Questions? Comments?

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