

QUIC ACK Frequency

draft-ietf-quic-ack-frequency-08

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Status

- WGLC concluded in Nov
- -08 update submitted in March addressing all WGLC comments (0 open issues)
- Thanks to Lucas, MT, Magnus, Kazuho, Marten, Gorry, and Ingemar!
 - ToDo: add thanks to acknowledgement section (see PR #285)

Overview Issues (1): Editorial/Clarifications

- Editorial:
 - #224, #226, #229, #230, #231, #233, #237, #239, #241, #242, #243, #246, #247, #251
- Clarifications:
 - #227: clarification on ways to request one ACK per RTT (PR #287)
 - #228: clarification when to send ACK_FREQUENCY frame (PR #275)
 - #236: seq# must be monotonically increasing (#259)
 - #238: IMMEDIATE_ACK frames cannot be sent in 0-RTT packets
 - #248: example clarification (PR #274)
 - #240: IMMEDIATE_ACK frames are congestion controlled

Overview Issues (2): Closed without action

- Closed without action
 - #225: reordering threshold and ECN are different things...
 - #232: maximum value of min_ack_delay is defined by max_ack_delay
 - #234: “negotiation” clarification was already fixed by PR #252
 - #244: not every CE is ack’ed; only a change between CE and Non-CE
 - further optimization are left for future version! (see also mail from Ingemar)
 - #245: send ACK *soon* after idle period?
 - out-of-scope for this draft to further specify this!

Overview Issues (3): Normative impact

#235: Max value of Max Ack Delay

- PR #276: Clarify that it's the same as max_ack_delay from RFC 9000
- PR #284:
 - MUST->SHOULD:
“On receipt of a valid value, the endpoint **SHOULD** update its max_ack_delay to the value provided by the peer”
 - TRANSPORT_PARAMETER_ERROR -> **FRAME_ENCODING_ERROR**
(on receipt of an invalid value)

#253: No change in ack behavior before the first ACK_FREQUENCY frame?

- PR #277:
“**If the Ack-Eliciting Threshold is larger than 1**, an endpoint **SHOULD** send an immediate acknowledgement when a packet marked with the ECN Congestion Experienced (CE) `{{?RFC3168}}` codepoint in the IP header is received and the previously received packet was not marked CE.”

Next steps

- One fully editorial PR ([#279](#)) by Tatsuhiro to add table to examples
 - Is that helpful? Should we merge?
- 11 March 2024: Email by Ingemar on use fo max_ack_delay for sending ACKs for CE
 - Related to issue #244 and is an optimization for the future?
- 2 Nov 2023: Email by Gorry: “My request is to RECOMMEND at least 1 ACK/RTT when sending data“
 - When discussed in issues #168 and #227, decision was to not include normative text.

Chairs plan to run a second WGLC after the Brisbane meeting!