L4S Issues 26, 27, 22

TSVWG Virtual Interim
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Issue 26: Admission Control

• Issue summary:
  • In Dual-Q, high rate unresponsive traffic in the L4S queue could cause problems
  • NQB draft recommends Queue Protection to prevent problems with “misbehaving” NQB-marked flows
  • Shouldn’t DualQ-coupled-AQM also recommend QP to prevent problems with misbehaving ECT(1)-marked flows?

• Non responding traffic of any type can hurt any type of other traffic due to the coupling
• Overload protection makes sure that this is also the case in extreme non-responding cases that saturate the coupling
• L4S does not create a DoS vector

• Proposal:
  • Many L4S nodes may also support the NQB PHB, where QP is recommended already
  • For those that don’t, additional policers can be added to protect the L4S queuing latency from misuse on an as-needed basis.
Issue 27: The term “Classic”

• Lots of opinions expressed - no consensus
• Proposed Compromise
  • Existing TCP
    • Don’t refer to existing standard TCP as “Classic”
    • Instead use “non-L4S TCP” or “TCP using classic congestion control”
  • Congestion Control
    • Continue to use the term “Classic Congestion Control” – defined in the document to mean Reno-friendly or $1/\sqrt{p}$
  • RFC-3168 ECN
    • Continue to use the term “Classic ECN” – defined in the document to mean RFC-3168 ECN
• Dual-Queue Description
  • Continue to use the terms “Classic Service”, “Classic Queue”, “Classic Packets”, “Classic sender”, “Classic AQM”, “Classic Traffic” to differentiate from “L4S *”
Issue 22: Deployment Feasibility

• Issue Summary:
  • DualQ classifies CE-marked packets to the L4S queue
  • A non-RACK-capable, RFC-3168 ECN-Capable TCP Connection, operating on a path where an RFC-3168 ECN AQM bottleneck precedes a DualQ bottleneck, could experience packet reordering
    • Likely one or more CE packets arriving ahead of some lower-sequenced ECT(0) packets

• Question:
  • In the case of a single CE marked packet, wouldn’t the sender see one dupack with ECE flag, then the normal ack sequence?
  • In the case of multiple (n) consecutive CE marked packets, wouldn’t the sender see n dupacks with ECE flag, then the normal ack sequence?
  • In both cases, wouldn’t the sender simply cut its cwnd one time? Since that is the desired behavior anyway, is there a problem to solve?

• Proposal:
  • This seems like an unlikely situation to happen in practice
  • This topic is already discussed in Appendix B.1 of the ecn-l4s-id draft
  • This seems like a relatively low priority item, but it could be tested if need be.