

L4S Status Update

draft-ietf-tsvwg-l4s-arch-16

draft-ietf-tsvwg-ecn-l4s-id-24

draft-ietf-tsvwg-aqm-dualq-coupled-21

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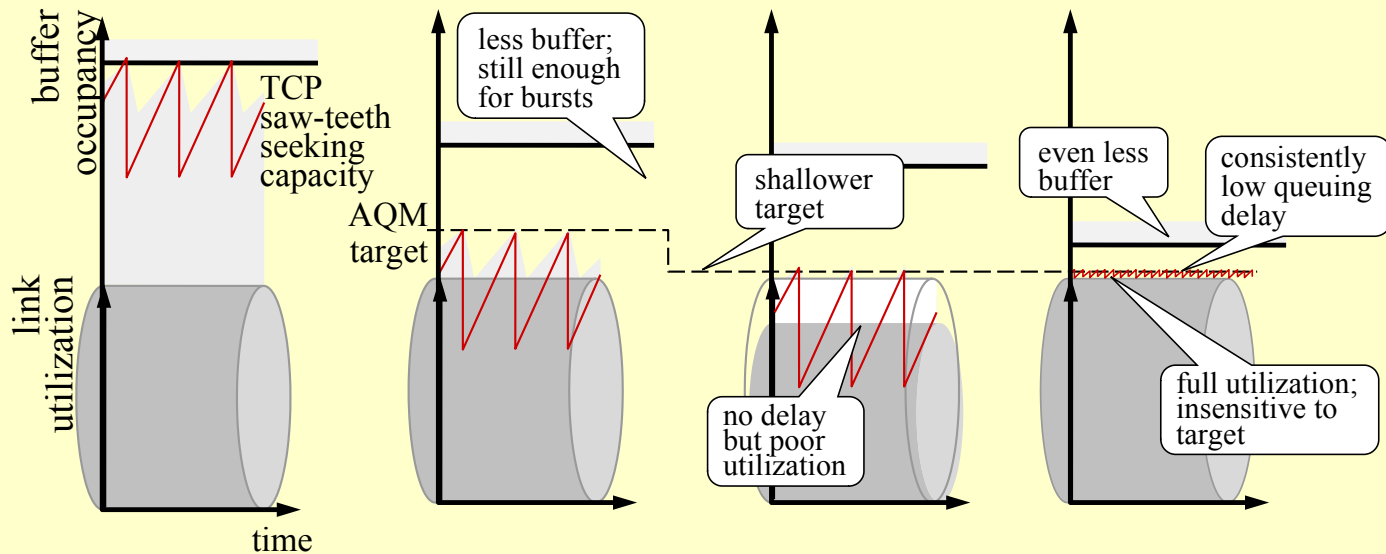
tsvwg, IETF-113--, Feb 2022

Recap – L4S Motivation

- Very low queuing delay and high throughput
- including for capacity-seeking & capacity-adaptive

The trick: scalable congestion control

	(1) Today (typical)	(2) Today (at best)	(3) Unacceptable	(4) L4S
Bottleneck	Bloated drop-tail buffer	AQM	Shallower AQM	Immediate AQM
Sender CC	Classic	Classic	Classic	Scalable (tiny saw-teeth)



L4S draft updates since IETF-112

- 3 main drafts updated twice, all in lock-step
 - 24 Dec 21 & 1 Feb 22
- each change below discussed on tsvwg list betw Nov'21 & now.
 - except items tagged 'upcoming' which will appear on the list ASAP
- slides are paraphrased, see drafts for actual text

Draft updates: L4S Architecture

l4s-arch-14 → 16

- Normative – n/a
- Technical - none
- Editorial
 - Under overload, drop of ECT packets introduced (previously said "ECN marking disabled", even tho' it isn't) [Authors]
 - Described references, not just bare citations [Stuart's rvw]
 - Referenced iccrv draft for BBRv2 and removed mention of BBRv1
- Upcoming
 - Delete Appx A (outdated ToDo list of L4S standardization items) [Authors/Wes]

Draft updates: ECN Protocol for L4S

ecn-l4s-id-22 → 24

- Normative
 - Prague req's on ECN AQM fallback (§4.3, bullet #3) [Jake]:
 - tightened and clarified mandatory detection: MUST be implemented **and used**
 - "detection of potential problems" is either direct (actual problems), or by inference (from likely type of AQM)
 - §§4.4 & 5.2: L4S AQM MUST signal congestion ASAP, also allowed to mix in smoothed signals (replaces SHOULD NOT smooth variations, with an exception for mixing in smoothed signals) [Bob]
 - L4S identifier exceptions [Gorry, PeteH]
 - §5.4.1.1: To include additional traffic in L queue, MUST NOT alter Not-ECT or ECT(0) (replaces MUST NOT alter non-ECN identifiers, which strayed beyond L4S remit)
 - §5.4.1.2: If excluding any L4S packets from L queue, drops or marks MUST still be compatible with L4S senders, and MUST NOT mark with Classic prob, which would confuse sender
- cont...

Draft updates: ECN Protocol for L4S

ecn-l4s-id-22 → 24

- cont...
- Technical
 - Open Questions (§7.1) to be answered by L4S experiments. Added [Olivier]:
 - what types of L4S AQMs were deployed and how prevalent was each type?
 - are signalling patterns different from those envisaged when Prague req'ts written?
 - dependence of L4S performance on b/w or RTT?
 - how prevalent were bursty links that affected L4S performance, and how much did L4S have to be altered to accommodate them?
- Editorial
 - Various clarifications and corrections; Referenced iccrv draft for BBRv2 [Bob, DavidB]
- Upcoming Editorial
 - Just before discussion of hash collisions and VPNs:
"With FQ, ... different flows are not meant to ~~coexist within~~ **be in** the same queue" [Authors]

Draft updates: DualQ Coupled AQMs for L4S

[aqm-dualq-coupled-19](#) → [21](#)

- Normative - none
- Technical
 - Appx. A. DualPI2: Corrected pseudocode (when step generalized to ramp, it was still logical AND'd) [Authors]
- Editorial [Authors]
 - Under overload, drop of ECT packets introduced (previously said "ECN marking disabled", even tho' it isn't)
 - Referenced iccrq draft for BBRv2
 - Renamed Appx. A.2 from "Overload Handling" to "Edge Cases" and moved low-rate link case out of core algo, into here.
- Upcoming Technical
 - Pseudocode missed a long-standing change to the Linux overload code (use the max of the two queue delays), which replaces only using L delay if C queue empty. [Authors]
 - Clarified that normative overload requirement (about introducing drop of ECT packets) applies to both queues [Authors].

Developments outside tsvwg

- draft-briscoe-docsis-q-protection-00 → 02
 - Two reviews by Adrian Farrel
 - Two revs: 17 Dec 21 & 31 Jan 22
 - Added intended audience and why an additional publication was nec.
 - Pulls together strands from DOCSIS spec for IETF convenience
 - Gives necessary flow behaviour for CC developers
 - Gives algorithm rationale (not in DOCSIS spec)
 - Added further rationale sections
 - Tracked minor changes to the DOCSIS spec
 - Clearer signposting of potential extensions beyond DOCSIS
 - Clarifications & corrections throughout
 - Review also in progress by MagnusW

L4S Status Update

Thank you to all those who contributed to the WGLC,
and to those still contributing to list discussion

Q&A