L4S Experimental Deployment

1. Draft update - draft-livingood-low-latency-deployment
2. Update on 1st ISP L4S experimental deployment

Draft - Deployment design recommendations to help achieve positive acceptance of dual queue low latency networking

- Answers the most common questions (outside of IETF):
  - How this experimental standard contrasts with priority & capacity
  - How low latency networking relates to net neutrality

- Suggests:
  - Only apps mark traffic, not the (access) network
  - Any app/edge provider should be able to use it
  - A range of end user CPE should be supported (incl. COAM)

- Recent updates
  - Now on -02 revision – probably can make one more minor one
  - *Direction requested: ISE or WG item?*

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Update on 1st ISP L4S experimental deployment

- Found an ECN marking problem
  - Prior tests were outbound / upstream ECT(1) marking
  - Missed inbound / downstream marking
  - Was being bleached due to CMTS policy (100% of DOCSIS Service Class Names, SCNs) validated via PCAPs – found via user reports
  - Was also leading CS1 into LAN / WiFi LAN of some customers & WiFi IEEE QoS transformed that into AC_BK background traffic (oops!)

- Now working in E2E DSCP-45

- Deploying in our virtual CMTS (vCMTS) areas, which also have “mid-split” spectrum map (more upstream spectrum/bandwidth) – easier & faster platform on which to innovate

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- Using 4 cable modems (leased & COAM): Xfinity XB7 & XB8, Arris S33, Netgear CM1000v2. Thus:
  - Some using our integrated modem / gateway/AP
  - Some using our integrated modem in “bridge mode” with separate router/AP
  - Some using separate CM from router/AP
  - Testing ethernet & WiFi connections

- For XB7 and XB8 when using as a WiFi AP, the L4S traffic downstream into WiFi LAN is marked for the IEEE 802.11 AC_VI queue. Customers using their own APs will have L4S and classic traffic share AC_BE queue. We will compare & contrast to see if one or two WiFi queues matters (and potentially which queues – can also try AC_VO).

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Update on 1st ISP L4S experimental deployment

- Announced 16 June 2023
- Very high customer interest compared to recent technical trials
- 1st cable modem on production network 11 July

- First 25 modems active 14 July (employees)
- 100s of customer modems will be activated late July – early August

- Weekly test assignments for simplicity - 1 type of test / application per week
  - General measurement diagnostics (LUL, network responsiveness test, etc.)
  - Facetime & other video conferencing
  - Gaming – NVIDIA, Valve, others
  - Other TBD apps

- 3rd party testing offer – what do you want us to test or deploy?
  - Deploying RIPE Atlas & NetMicroscope probes
  - **Willing to deploy your probes or run your tests!**

L4S Experimental Deployment

Update on 1st ISP L4S experimental deployment

- Trial will run July – September (longer if needed)
- Sharing regular updates on the list l4s-discuss@ietf.org
- Analyze results & determine next steps: September – October
- Launch decision-making 4Q2023
- Read out of results at IETF 118 in November 2023