Lo/La
A Loss/Latency Tradeoff Bit

draft-you-tsvwg-latency-loss-tradeoff
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Why?

- Most networks built/configured to minimize loss.
- Some transports/apps more sensitive to latency.

- Current approach: guess which traffic is which.
- Proposal: have source tag packets as explicitly preferring loss to latency, or vice-versa.

DSCP in Review

- Six bits in the IP header (4-9 in v6, 8-13 in v4) to allow classification of traffic for per-hop QoS:
  - Default: best-effort traffic
  - Class Selector: simple priority, backward-compatible with old IPv4 TOS byte
  - Expedited Forwarding (EF): low loss, low delay, low jitter, implemented w/priority queue
    - Voice Admit: EF with admission control
  - Assured Forwarding (AF): bandwidth-limited forwarding guarantee, four classes, three drop probabilities

Issues with DSCP

- Incentive to lie means DSCP often gets bleached to “default” at network borders
  - AF needs configuration of limits per class
  - EF is a “very important packet” flag
  - Both can be used to disadvantage default traffic
- Internet deployment requires external consideration (contracts, payments, etc.)

Explicit Tradeoff

- Lo/La is based on an explicit tradeoff:
  - Lo: I prefer latency to loss
  - La: I prefer loss to latency
    - no incentive to lie
    - no incentive to bleach

- Alternate approach to making DSCP deployable
- General principle: declarative, tradeoff-based signaling (draft-trammell-stackevo-explicit-coop)

One implementation

- Two DSCP codepoints in Pool 3:
  - 0b000001 **Lo:** minimize loss at expense of latency
  - 0b000101 **La:** minimize latency at expense of loss
- Two queues at likely bottlenecks:
  - Short queue for Lo (handled as DF)
  - Extremely short queue for La
- Fast deployment possible:
  - queue selection based on DSCP is deployed today
  - specific codepoint cutouts for bleaching at border