Prague lab testing

ICCRG, IETF 114
Vidhi Goel
Upstream over Ethernet
Standalone flow

BW >=12 Mbps

- Prague P90 is below 2ms
- Cubic P90 ranges from 13-22ms
Standalone flow

BW-RTT (Mbps, ms)

App Goodput

Prague

Cubic
Single flow against a competing flow

BW >= 12Mbps
- Prague P90 is below 3ms
- Cubic P90 ranges from 14-23ms
Multiple staggered flows

- Flow 1
- Flow 2
- Flow 3
- Flow 4

Prague

120 Mbps, 20ms RTT
Multiple staggered flows

Throughput (Mbps)

Time (s)

Prague

Cubic

Flow 1
Flow 2
Flow 3
Flow 4

120 Mbps, 20ms RTT
Multiple staggered flows

120 Mbps, 20ms RTT
Multiple staggered flows

120 Mbps, 20ms RTT
Prague IETF draft
Loss behavior

Use Cubic or Reno for reduction as well as increase during CA

(Investigate) Combine reduction due loss and CE in the same round
Pacing considerations

- Congestion control in user space (eg. QUIC Cubic)
  - Skew in user space timers
- On linux, offload to kernel
  - SO_MAX_PACING_RATE and FQ qdisc
  - SO_TXTIME (qdisc should support timestamp)
- Congestion control in kernel (eg. TCP Prague)
  - On linux, set sk_pacing_rate and tso_segs