

# A Sequence Number Extension for HTTP Datagrams



draft-ihlar-masque-datagram-numbers

**Masque WG @ IETF 117**

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# Updates since 116



- Expanded background section describing ATSSS and motivation.
- No changes to the wire format

# Recap



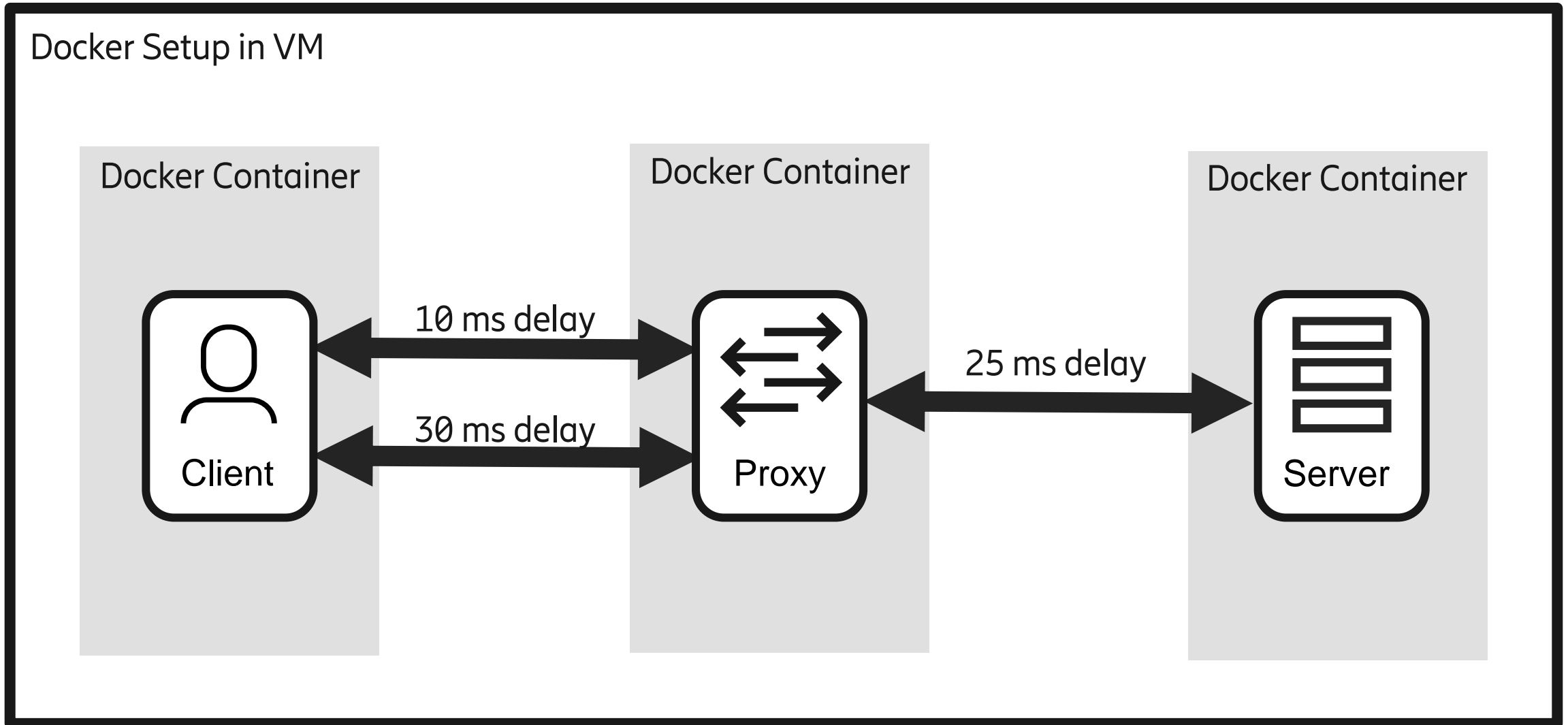
- Extend HTTP Datagrams with sequence numbers.
- Expected to be used with 3GPP ATSSS
  - Defined as a datagram mode in TS 23.501
  - Preferable that wire format is defined by IETF rather than by 3GPP CT1.
- Useful for multipath proxy scenarios where proxied payload is:
  - Duplicated over multiple paths.
    - Numbers help with deduplication
  - Transmitted in parallel over multiple paths.
    - Numbers help with minimizing out-of-order delivery

# Some Early Measurements

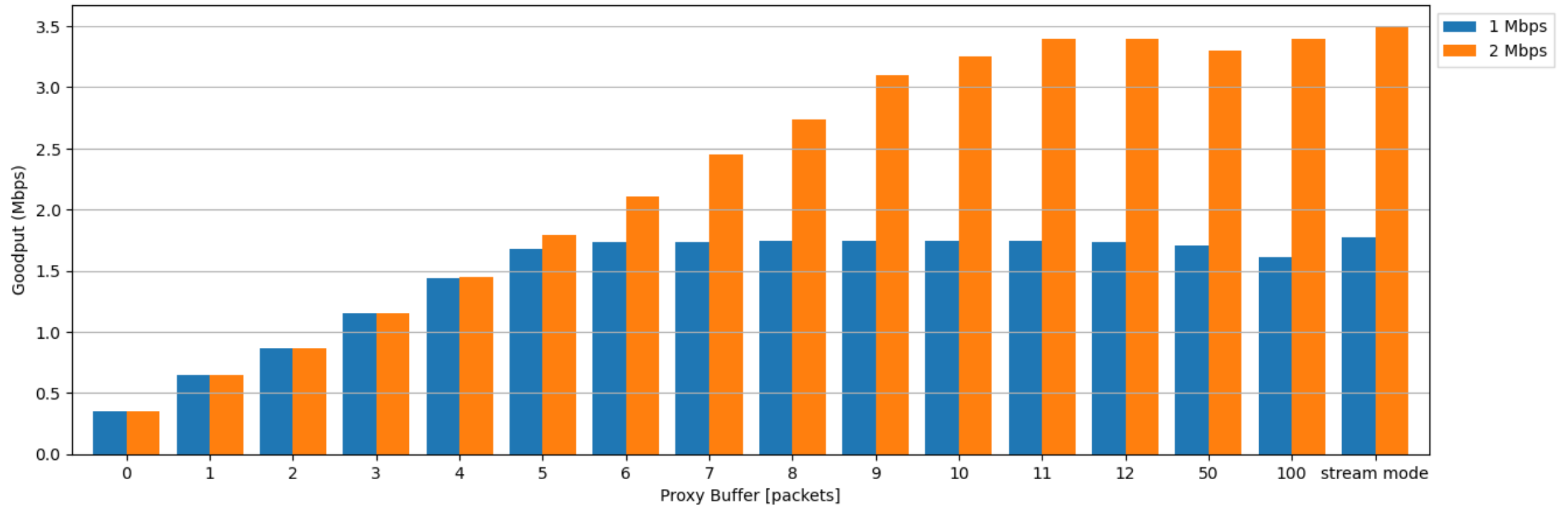


- Thesis student working on multipath and scheduling in relation to proxies.
- Early measurement results focusing on the reordering issue.
- Simple RR scheduler.
- Simple reordering buffer in Masque proxy with static size.
- e2e QUIC implementations with RFC 9002 default handling of loss detection and congestion control.
  - `kPacketThreshold` = 3
  - `kTimeThreshold` =  $9/8$  RTT

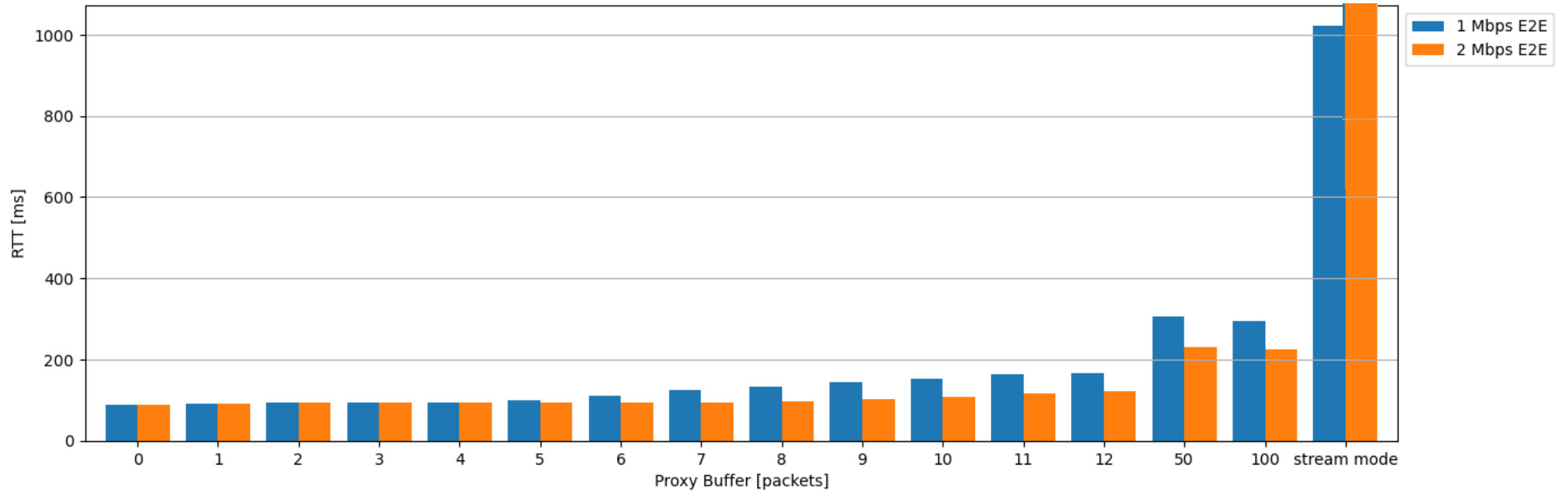
# Emulation Setup



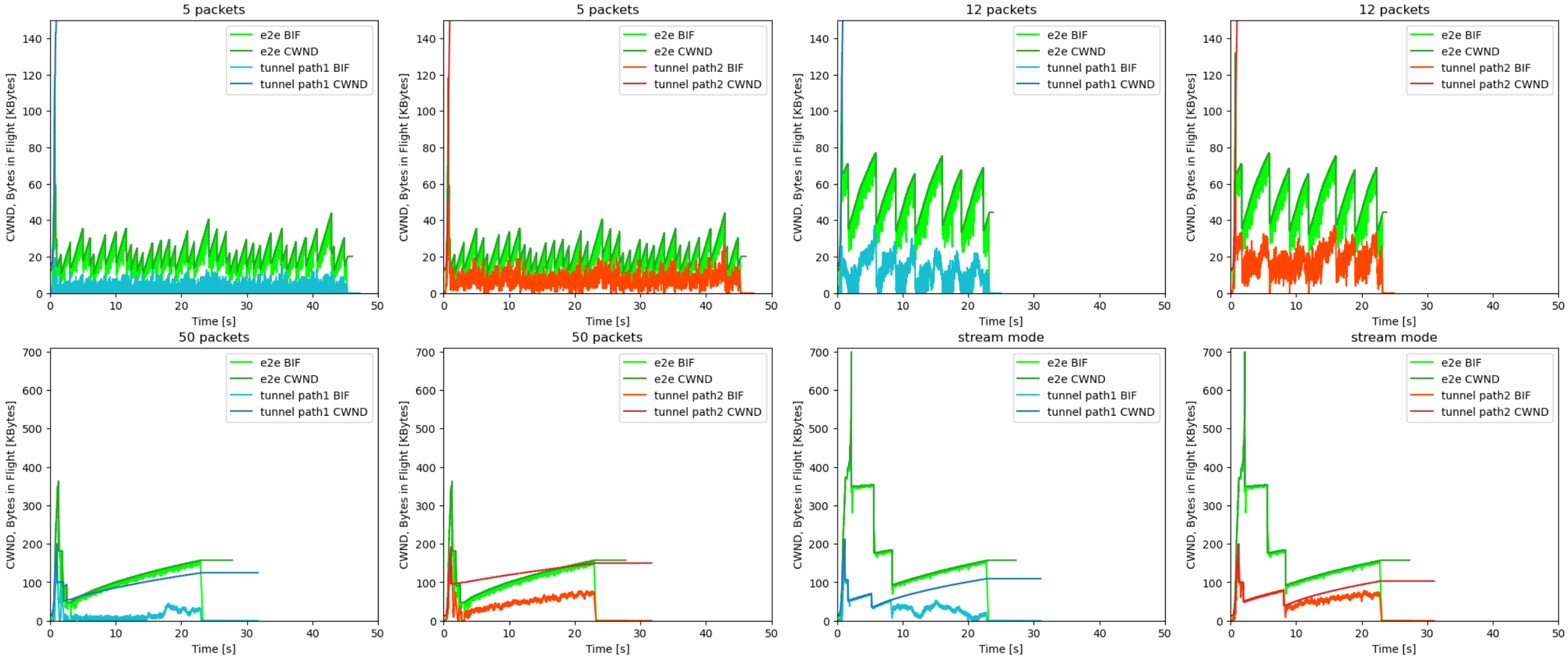
# Goodput



# RTT



# CWND, BIF 2 Mbps





# Next Steps



- More measurements
  
- Working group adoption?