

# Welcome to WITAREA

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IETF 119

# Congestion Control Working Group (CCWG)

RFC 5033 sets the rules for standardizing congestion controls

It's too hard

Fix RFC 5033 bis – almost done

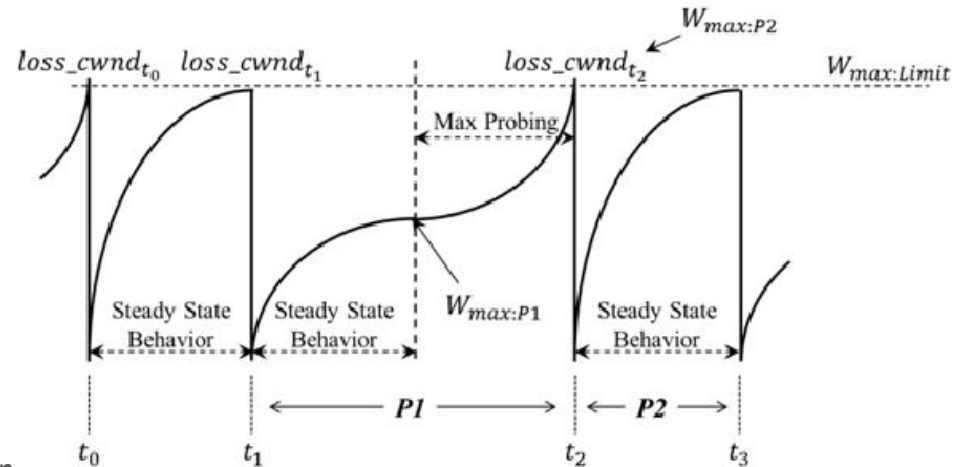
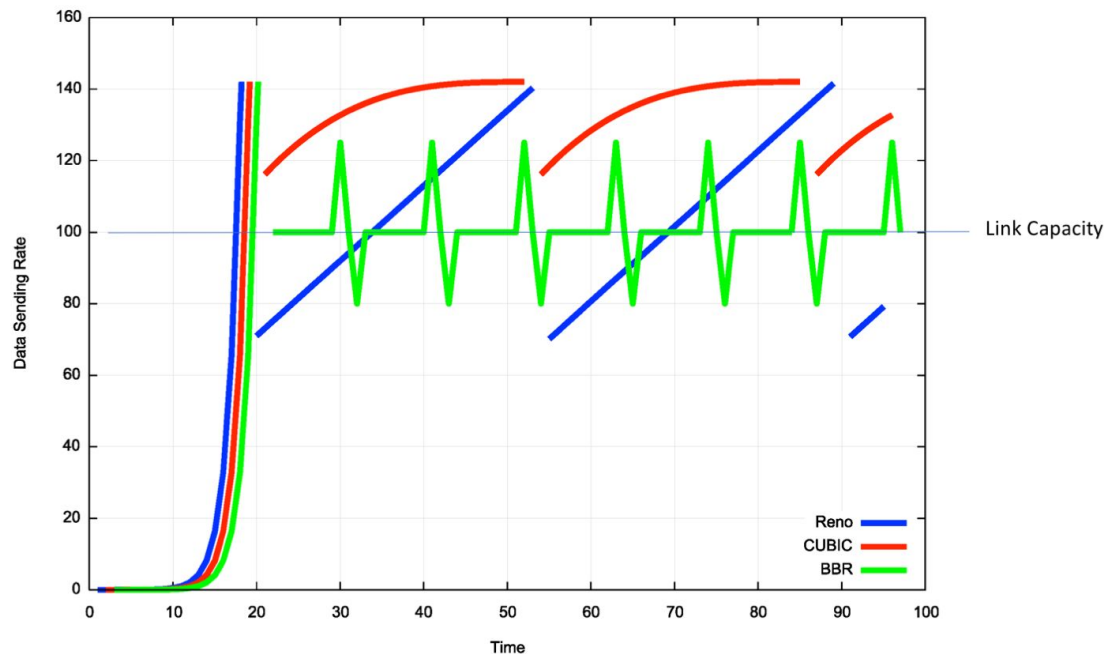


Image: Cao, Zhang. "Cubic with Faster Convergence: An Improved Cubic Fast Convergence Mechanism", 2013

Figure 1. The curve of congestion window of Cubic

# CCWG: What's Next

- The gate is open for new algorithms
  - BBR
  - DCTCP
  - TCP Prague
- BCPs, advice



*Image: APNIC blog*

# MASQUE

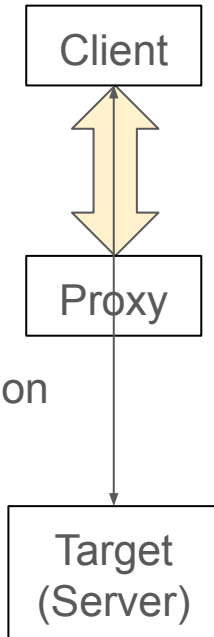
- QUIC datagrams allow UDP-like service guarantees
- Extend HTTP CONNECT to carry:
  - UDP ✓
  - IP ✓
  - UDP Listen
  - QUIC (UDP but more bandwidth-efficient)
  - Ethernet

# MASQUE: Use Cases

Privacy Proxy

Outer HTTP/3  
Connection (fully  
encrypts inner  
connection)

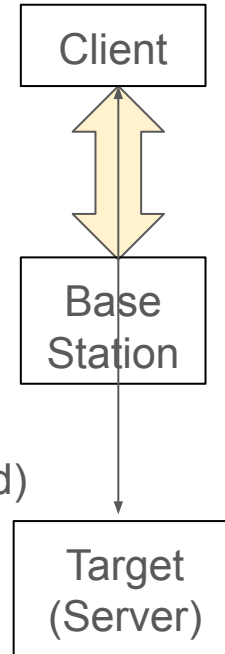
Inner Connection  
(client IP  
replaced)



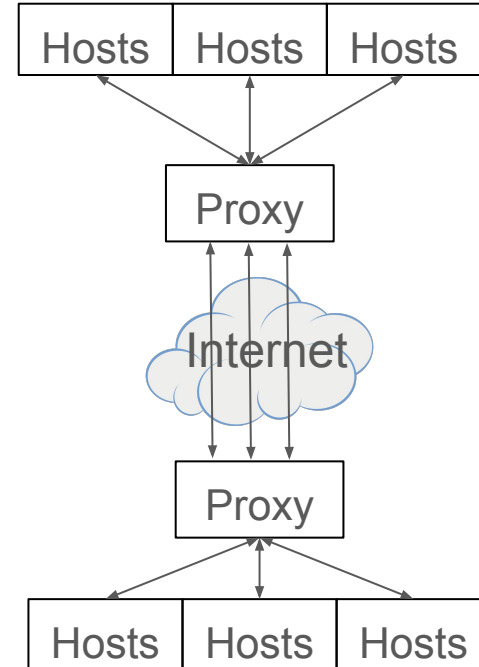
Performance-Enhancing Proxy

Outer HTTP/3  
mobile-optimized  
connection

Inner Connection  
(client IP replaced)



VPN



# NFSv4

- Maintain NFSv4 (4.0, 4.1, 4.2) and Remote Direct Memory Access (RDMA)
- Current work:
  - v4.1 refresh
  - Internationalization
  - RPC over RDMA

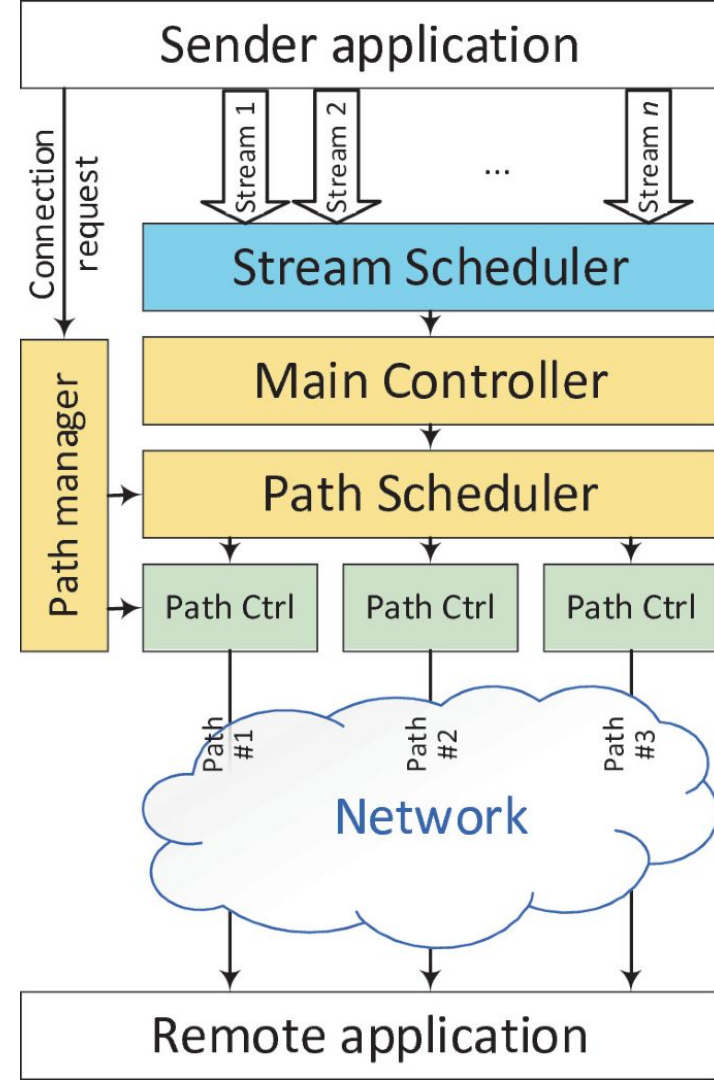
# QUIC

A “new” reliable transport

- Lower Handshake Latency
- Stream multiplexing at the transport, Better Loss response
- Security at the transport layer
- Multihoming
- Extensibility!

# QUIC: What's New?

- Standardized logging formats (to replace tcpdump) – including HTTP/3
- Coordination with Layer 4 Load Balancers
- Protocol tweaking (ack frequency, reliable reset)
- Multipath!



*Image: Morawski & Karbowańczyk. "Multipath QUIC – Directions of the Improvements", 2022.*



# Transport Services (TAPS)

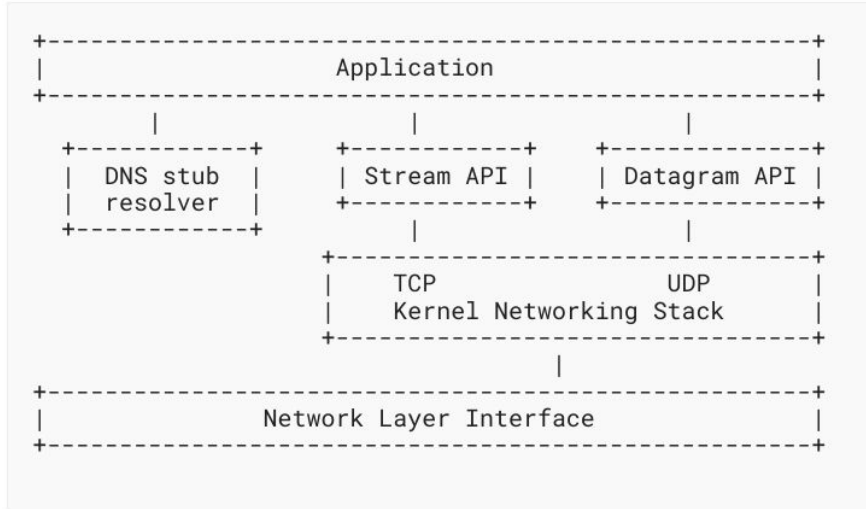


Figure 1: Socket API Model

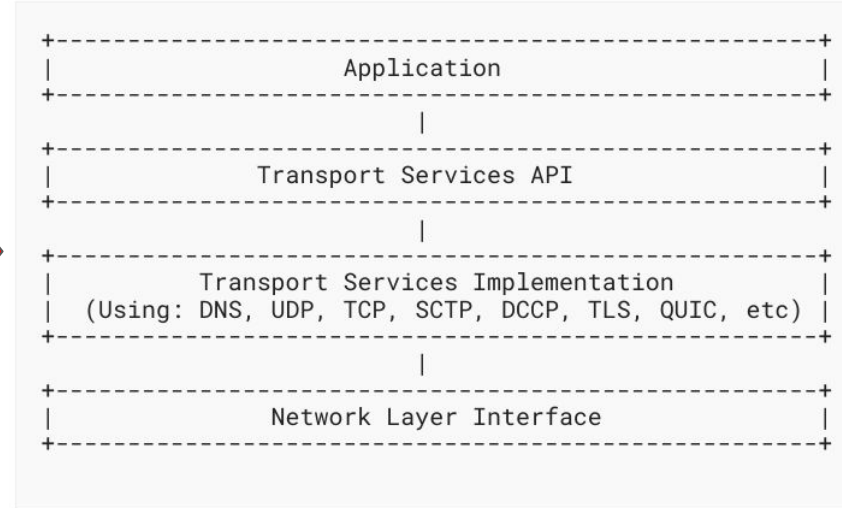
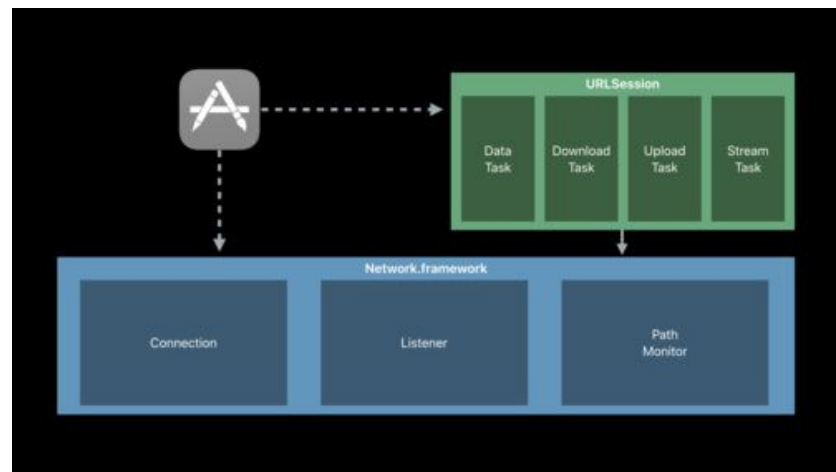


Figure 2: Transport Services API Model

# TAPS: Why?

- So much networking is now built on top of sockets
- No common APIs
- Applications have to “marry” protocol implementations
- Blocks innovations

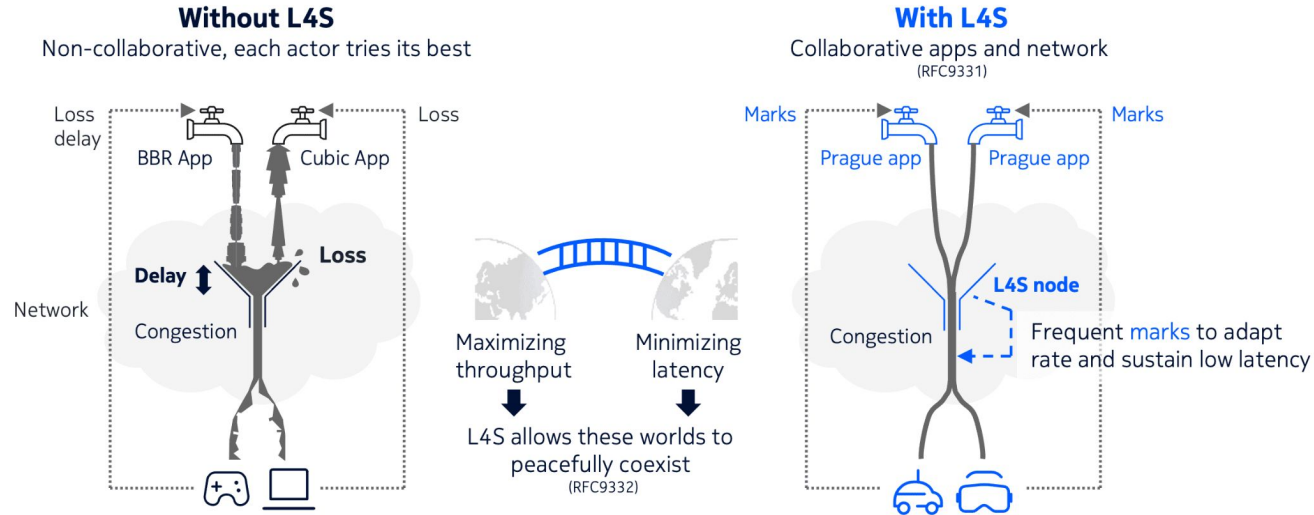
*image: apple.com*



# TCPM

- TCP Maintenance is self-explanatory
- Extensions are hard
- Current work:
  - Performance tweaks (ack rate, proportional rate reduction)
  - Tackling the option limit
  - L4S support

# TCPM: L4S



# TSVWG: SCTP

- 23 years old
- Doesn't get through middleboxes
- SCTP-over-DTLS in WebRTC
- Used in Service Provider signaling networks
- Currently:
  - security fix for AUTH chunks
  - Zero checksum
  - DTLS-over-SCTP

# TSVWG: UDP and DCCP

- UDP Options
- DCCP Multipath

# TSVWG: L4S followup

- Operational Guidance
- Tunnel ECN marking
- Non-queue-building DSCP

Questions?