Welcome to WITAREA

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Congestion Control Working Group (CCWG)

RFC 5033 sets the rules for standardizing congestion controls
It’s too hard
Fix RFC 5033 bis – almost done


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

Proxy

Internet

Hosts Hosts Hosts

Hosts Hosts Hosts
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!

Transport Services (TAPS)

![Diagram of Socket API Model](image1)

![Diagram of Transport Services API Model](image2)

*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
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

**Without L4S**
Non-collaborative, each actor tries its best

- Loss
- Delay
- Congestion
- BBR App
- Cubic App

**With L4S**
Collaborative apps and network (RFC3331)

- Loss
- Prague app
- Marks
- Frequent marks to adapt rate and sustain low latency

L4S allows these worlds to peacefully coexist (RFC9332)
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?