

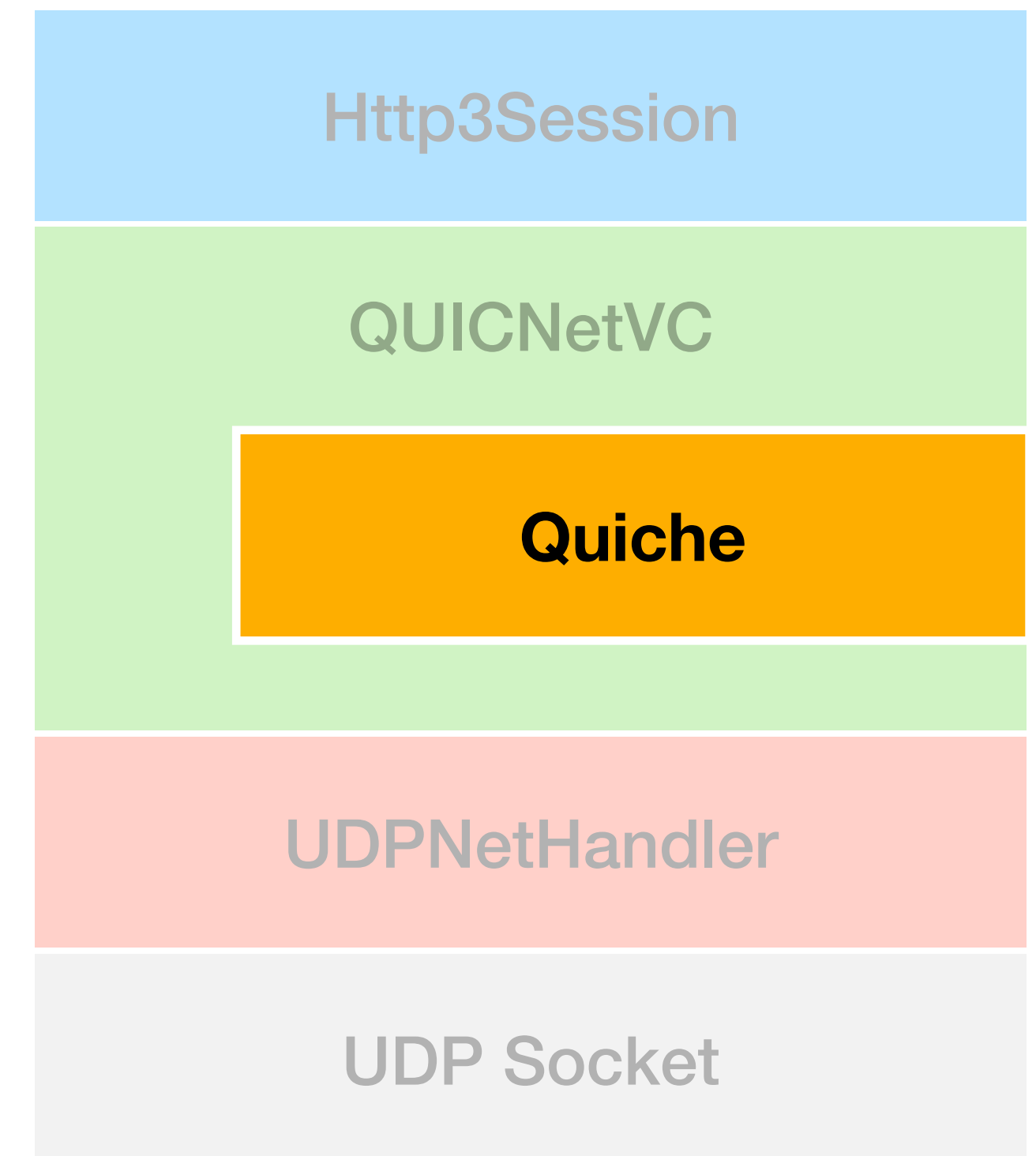
QUIC & HTTP/3 on ATS 10.0

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A Big Change

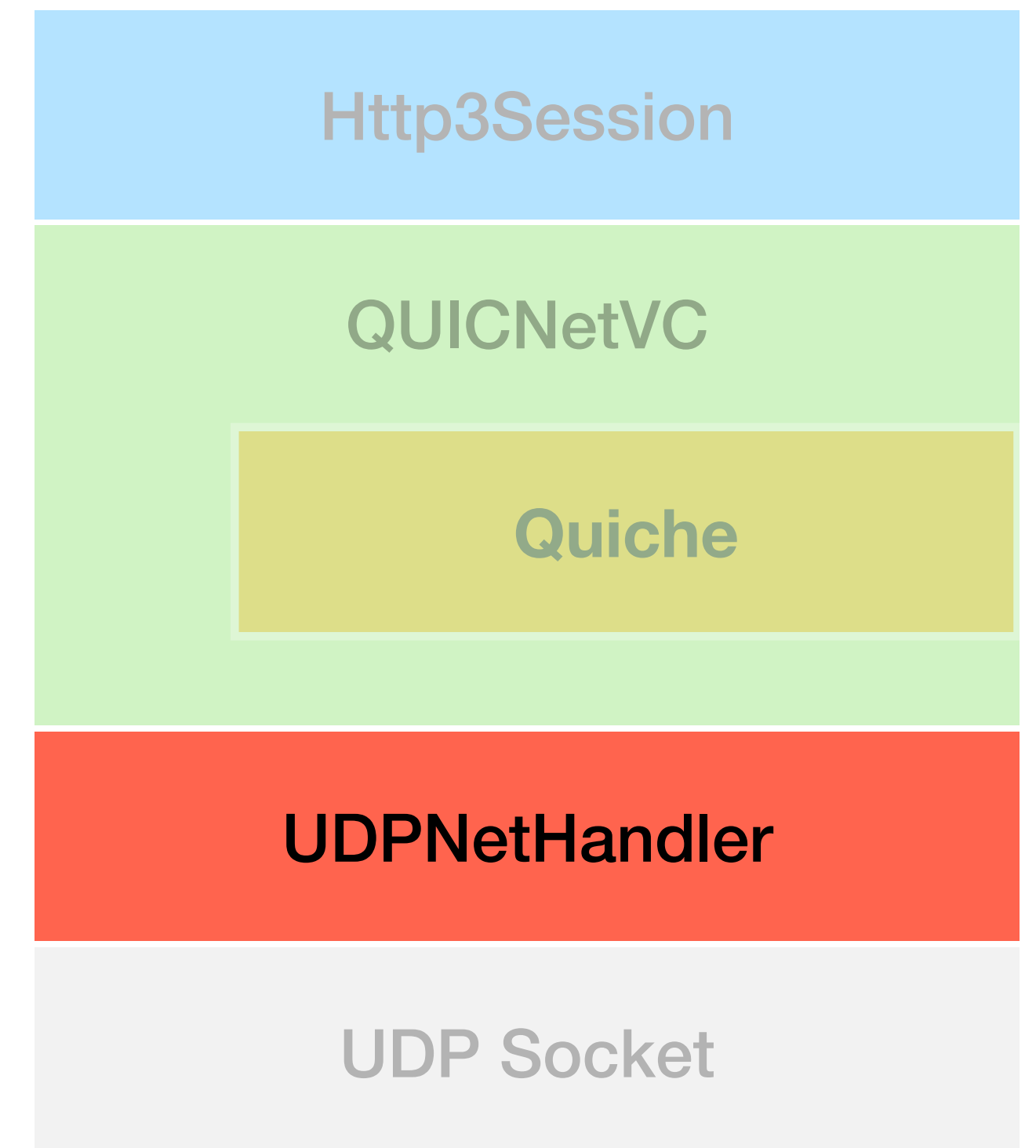
Support for using Quiche as QUIC impl. (#8956)

- Pros
 - Ready-to-Use QUIC implementation
 - PLPMTUD
 - Pacing
 - CUBIC, BBR
 - No need to maintain QUIC implementation by ourselves
- Cons
 - Need to use BoringSSL
 - Less flexible



Other changes

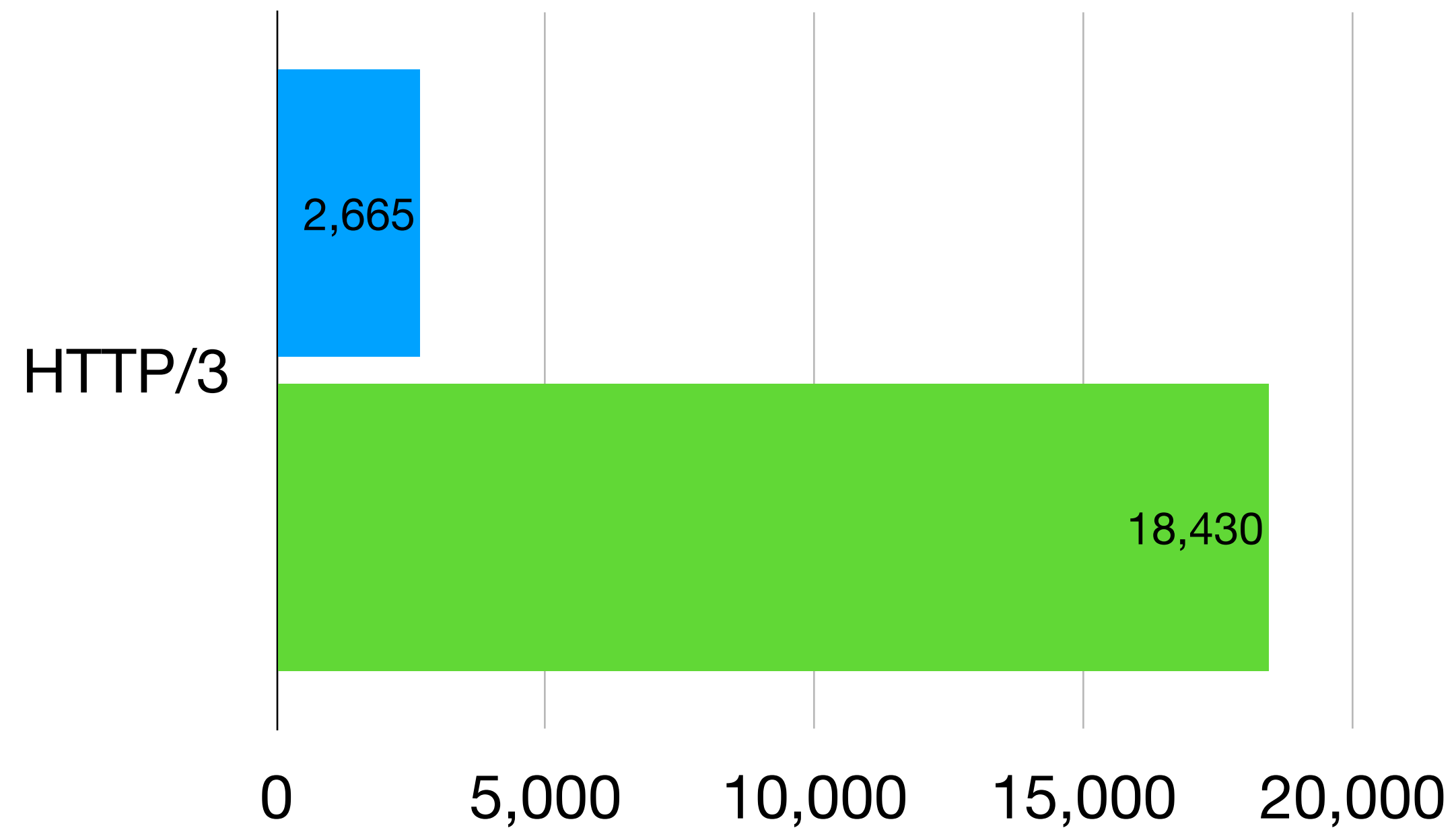
- Support for sendmmsg for UDP sockets
- Support for UDP_GSO
- Support for SO_REUSEPORT for UDP sockets
- Less memcpy in HTTP/3



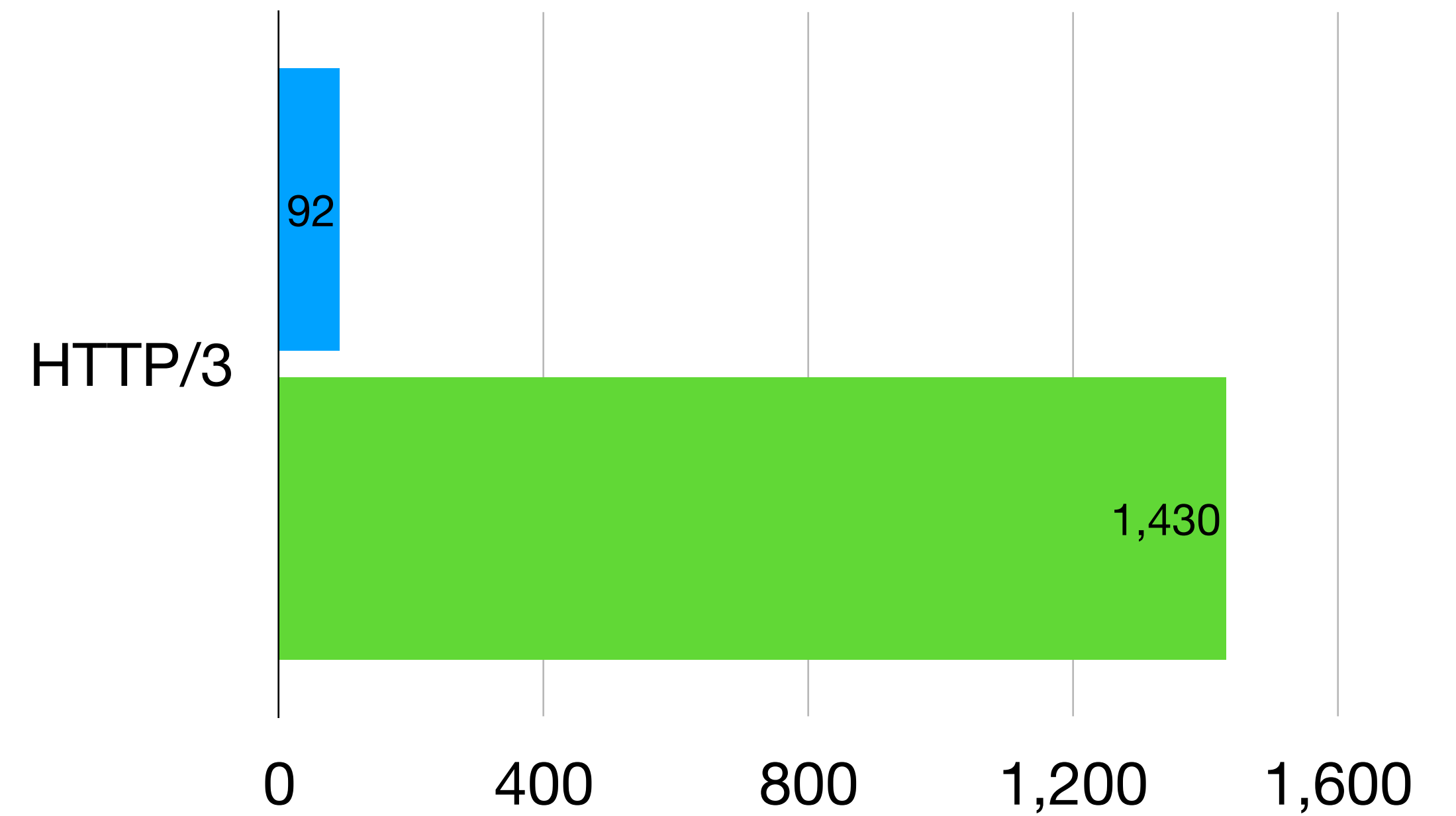
Performance

Original vs Quiche

Req/sec (1KB obj)



MByte/sec (32MB obj)

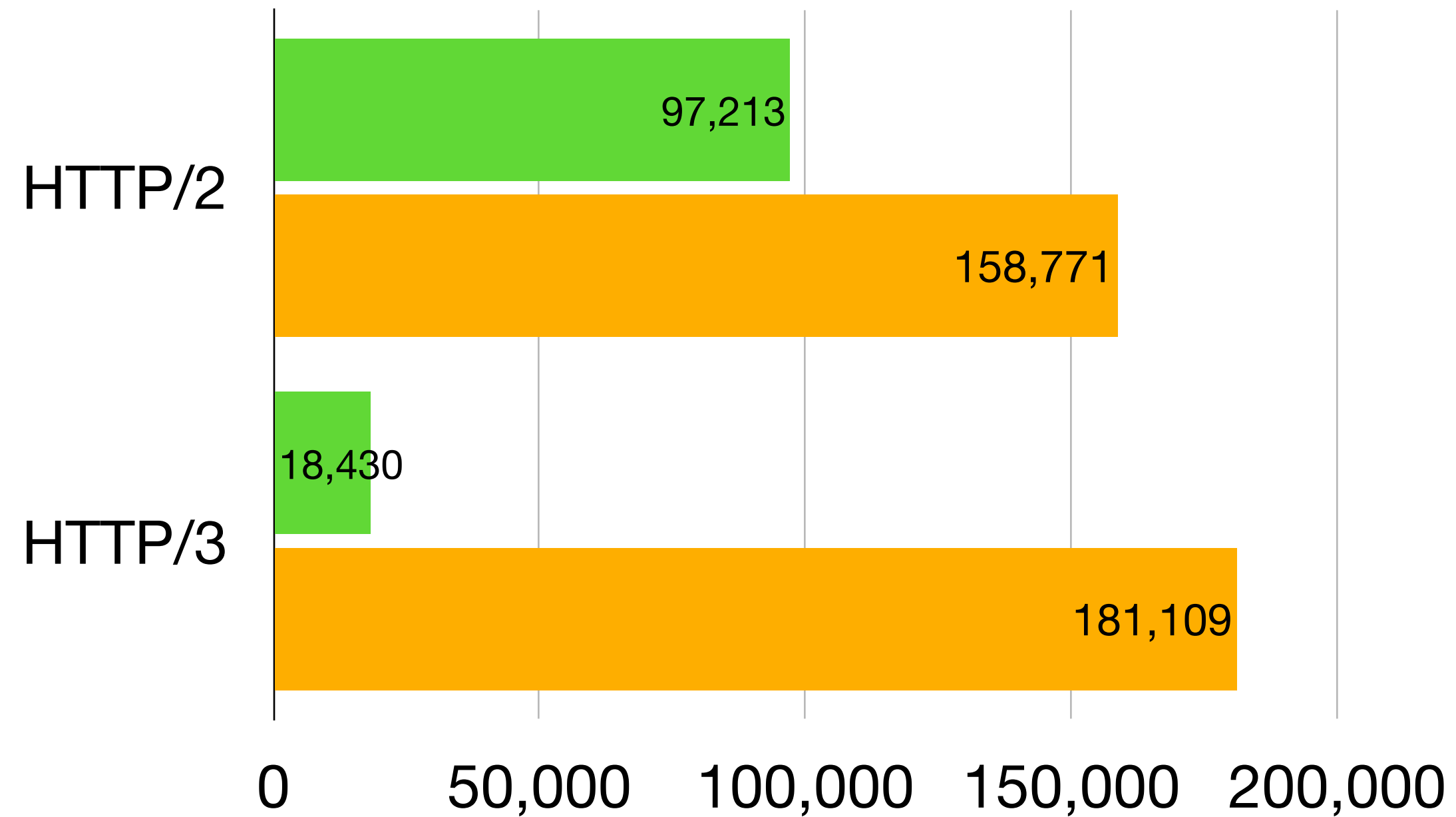


Original Quiche

Performance

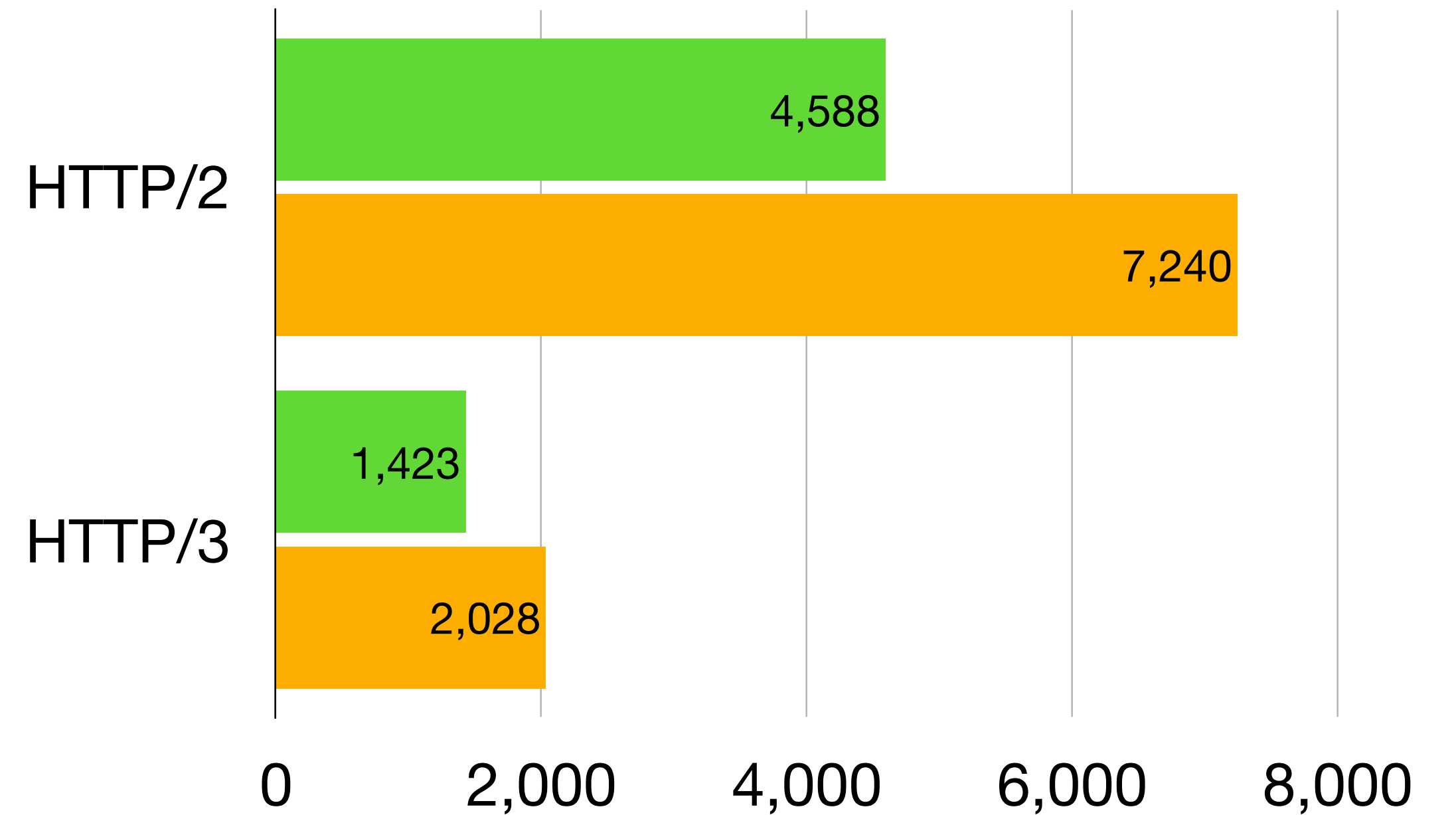
ATS vs Nginx

Req/sec (1KB obj)



h2load -n 300000 -c 500 -m 100 -t 10 --npr-list [h2|h3] https://localhost:443/1kb

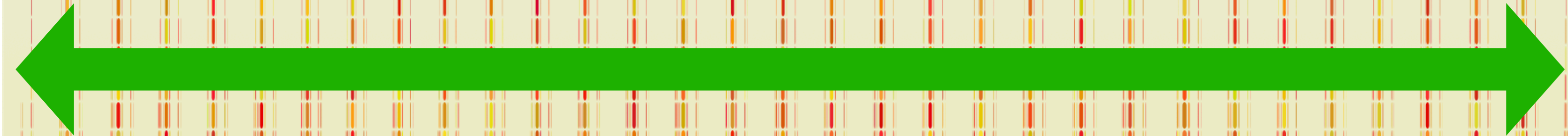
MByte/sec (32MB obj)



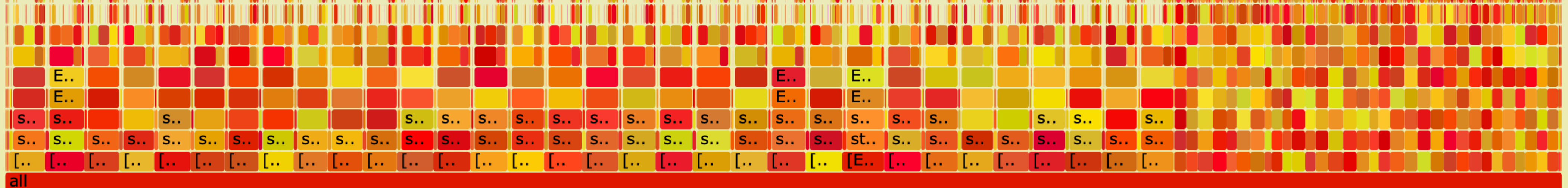
h2load -n 500 -c 500 -m 100 -t 10 --npr-list [h2|h3] https://localhost:8443/32mb

ATS Nginx

ET_NET



ET_UDP: 25%

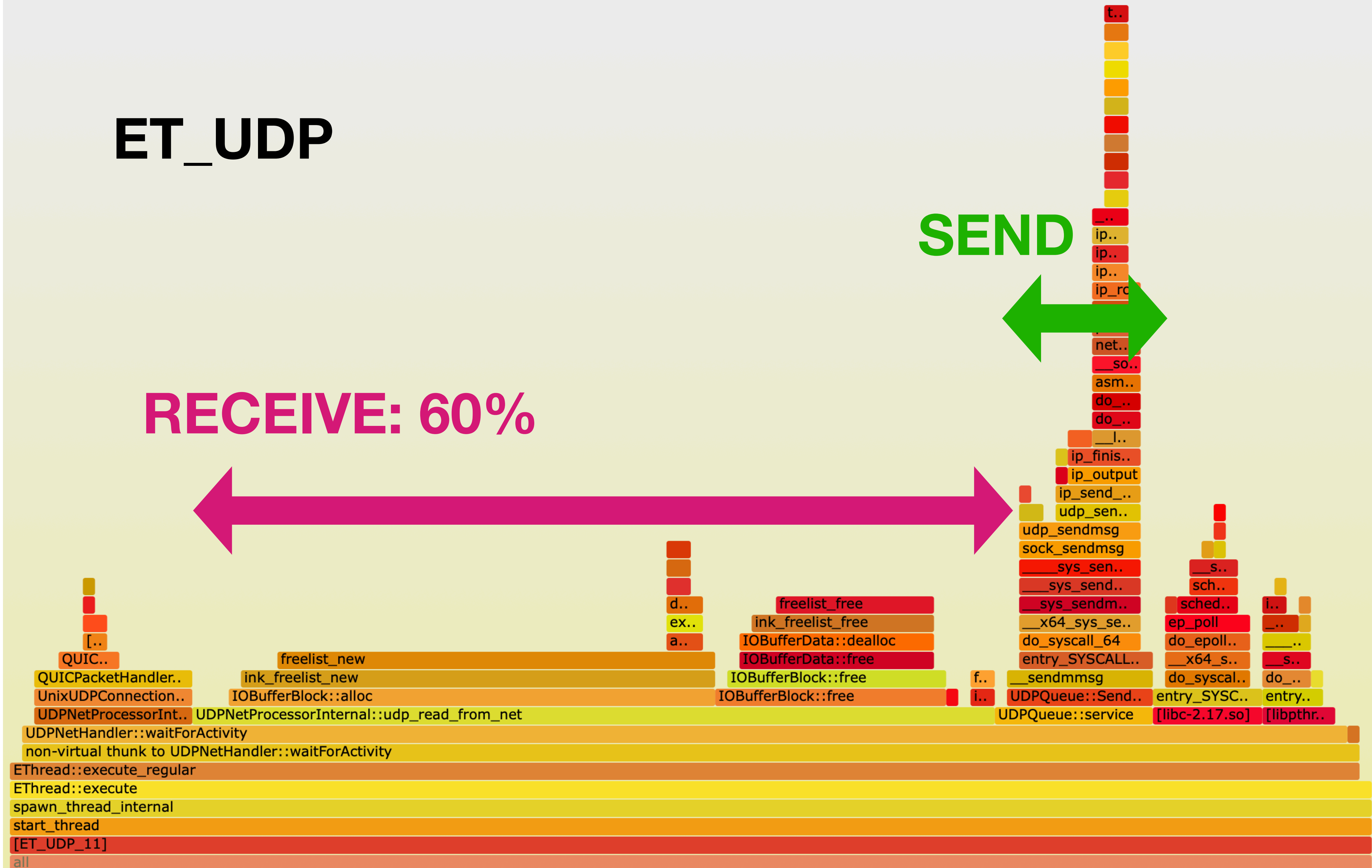


all

ET_UDP

SEND

RECEIVE: 60%



Next step for performance improvement

- Use recvmmsg and UDP GRO
- Reduce the number of IOBufferBlock used

Features missing

- HTTP/3
 - Server Push
 - Graceful shutdown
 - QPACK (Dynamic Table)
 - QLog
 - Big DATA frame handling
- QUIC
 - Priority
 - Load Balancing
- Metric
- Timeout
 - Active
 - Inactive
 - Handshake
- Config
 - Secrets for tokens
 - Max number of streams
- IP_Allow
- TS API
 - Remove direct dependency on SSLNetVC
 - Add support for TLS hooks
- TLS
 - Client cert verification
 - Early Data
- SNI Actions
 - Enable/Disable QUIC
 - Remove direct dependency on SSLNetVC

Questions?