Implementing QUIC for fun and planning

Christian Huitema
QUIC BOF
IETF 96 – Berlin, July 2016
Why implementing QUIC

• Like the general design
  • Transport over encryption
  • All kinds of transport algorithm improvements
  • Obvious potential

• Implement from spec (internet drafts) not code
  • Forced lots of discussion in QUIC Forum
  • Developed extensive set of tests

• Evaluate whether/how to ship in Windows
  • Depends on demand from applications, availability of standard
  • Would enable code update through Windows Update
Update from July 2015

• QUIC specification is getting simpler
  • Removal of FEC, No more entropy, simpler ACK
  • Updated prototype to the new spec – removed a lot of complexity

• Agreement on embedding TLS 1.3
  • Removes a major risk factor, only one stack to worry about

• This BOF, the proposed charter
QUIC versus TCP/TLS

• TCP and TLS have improved
  • RACK, TLP, TFO, TLS 1.3, 0-RTT
  • Performance probably similar to current QUIC

• Arguments for QUIC
  • Rapid innovation
  • Features like FEC, Partial Delivery that are really hard in TCP
  • Work on many platforms
Next steps

• Interoperability tests with basic spec, TLS 1.3
  • Best way to verify that the spec is good!

• Design of extensibility feature
  • Target distributed innovation

• Design of QUIC multipath
  • With special emphasis on privacy issues!

• Performance tests
  • Evaluate cost/benefits of QUIC vs “modern” TCP+TLS in realistic benchmark