Core Protocol Spec

draft-hamilton-quic-transport-protocol-01
Draft Outline

- Overview of QUIC features
- Packet Types and Formats
- Life of a Connection
  - Describes Version Negotiation and Crypto handshake requirements
- Frame Types and Formats
- Packetization and Reliability
- Streams: QUIC's Data Structuring Abstraction
- Flow Control
- Error Codes
- Security Considerations
Current State

Draft documents QUIC version Q034, which is tethered to the current Google deployment.

- "Diversification Nonce" is for QUIC crypto; not useful with TLS 1.3
- Timestamps are in a home-grown floating-point format
- Numbers are little-endian

If adopted, based on wg discussion and consensus, the draft will move away from Q034 design.
Discussions on mailing list so far

- Packet number vs. Sequence number
  - Use "Packet number", since TCP seq num has different semantics.
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- Endian-ness
  - Q034 uses little-endian numbers, since Chrome runs only on little-endian machines.
  - Also, there are about 21 big-endian machines left in the world.
  - However, IETF uses big-endian for everything.
  - QUIC will interact with HTTP/2 and with TLS, both of which use big-endian.
Discussions on mailing list: Versioning

- QUIC uses 32-bit version.
  - Q034 is represented by the ASCII values of the four characters
    That is, "Q034" is 0x 51 30 33 36
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- Martin's strawman proposal:
  - 0xffffff0000-0xffffffff for experimentation
  - 0xffffffff5100 and up as corresponding to versions of the draft
  - (Also, ALPN label tracks QUIC version referred to by HTTP mapping doc)
Discussions on mailing list: Versioning

- Jana's mod to Martin's strawman:
  - Reserve 0x00000001 to 0x000000ff (16K versions) for standards
    - 0x00000001 - 0x0000fff (4096 versions) to QUIC standards
    - 0x00001000 - 0x0000ffff (~60K versions) for draft versions
  - 0x00010000 upwards (~4 billion versions) for experimentation
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- Suggestion: Wiki page for experimental versions
  - Is self-registration adequate?
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  - List and discuss semantics of connection options
- Clean up and group error codes (editorial)
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  - Currently a home-grown floating-point wire format
- Connection ID is currently client-chosen
- Addressing: Connection ID and relationship to 5-tuple
  - Relevance to QUIC mobility
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- Packet size / Path MTU recommendation
- Functional API, ala RFC 793 (?)