

# QUIC

IETF 97

# NOTE WELL

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# Agenda

- Blue Sheets / Scribe Selection / Agenda Bashing
- Charter Overview (20 minutes)
- Planning (20 minutes)
- Drafts (45 minutes)
- Parking Lot (time permitting)

# Charter Overview

The QUIC working group will provide a standards-track specification for a UDP-based, stream-multiplexing, encrypted transport protocol, based on pre-standardization implementation and deployment experience, and generalizing the design described in

draft-hamilton-quic-transport-protocol,

draft-iyengar-quic-loss-recovery,

draft-shade-quic-http2-mapping, and

draft-thomson-quic-tls.

# Charter Overview

Key goals for QUIC are:

- Minimizing connection establishment and overall transport latency for applications, starting with HTTP/2;
- Providing multiplexing without head-of-line blocking;
- Requiring only changes to path endpoints to enable deployment;
- Enabling multipath and forward error correction extensions; and
- Providing always-secure transport, using TLS 1.3 by default.

The work of the group will have five main focus areas, corresponding to five core deliverables.

# Charter Overview

The first of these is the **core transport work**, which will describe the wire format, along with the mechanisms for connection establishment, stream multiplexing, data reliability, loss detection and recovery, congestion control, version negotiation, and options negotiation. Work on congestion control will describe use of a standardized congestion controller as a default scheme for QUIC.

Defining new congestion control schemes is explicitly out of scope for this group. QUIC is expected to support rapid, distributed development and testing of features.

# Charter Overview

The second of these focus areas is **security**. This work will describe how the protocol uses TLS 1.3 for key negotiation and will also describe how those keys are used to provide confidentiality and integrity protection of both application data and QUIC headers.

This work will ensure that QUIC has security and privacy properties that are at least as good as a stack composed of TLS 1.3 using TCP (or MPTCP when using multipath).

# Charter Overview

The third focus area will describe **mappings between specific application protocols and the transport facilities of QUIC.**

The first mapping will be a description of HTTP/2 semantics using QUIC, specifically with the goal of minimizing web latency using QUIC. This mapping will accommodate the extension mechanisms defined in the HTTP/2 specification. Upon completion of that mapping, additional protocols may be added by updating this charter to include them.

# Charter Overview

The fourth focus area will extend core protocol facilities to enable **multipath capabilities** for connection migration between paths and load sharing across multiple paths.

# Charter Overview

The fifth focus area will provide an **Applicability and Manageability Statement**, describing how, and under what circumstances, QUIC may be safely used, and describing deployment and manageability implications of the protocol.

# Charter Overview

Current practices for network management of transport protocols include the ability to apply access control lists (ACLs), hashing of flows for equal-cost multipath routing (ECMP), directional signaling of flows, signaling of flow setup and teardown, and the ability to export information about flows for accounting purposes.

The QUIC protocol need not be defined to enable each of these abilities, or enable them in the same way as they are enabled by TCP when used with TLS 1.3, but the working group must consider the impact of the protocol on network management practices, reflecting the tensions described in RFC 7258.

# Charter Overview

Extensions that will support partial reliability, and negotiation and use of Forward Error Correction schemes, are out of scope in this version of the working group charter.

Note that consensus is required both for changes to the current protocol mechanisms and retention of current mechanisms. In particular, because something is in the initial document set does not imply that there is consensus around the feature or around how it is specified.

The QUIC working group will work closely with the HTTP working group, especially on the QUIC mapping for HTTP/2.

# Charter Overview

In order to achieve the milestones set out below, the group expects to make extensive use of interim meetings, especially in its first year.

# Milestones

- May 2019 - Multipath extension document to IESG
- Nov 2019 - QUIC Applicability and Manageability Statement to IESG
- Nov 2018 - HTTP/2 mapping document to IESG
- Mar 2018 - TLS 1.3 Mapping document to IESG
- Mar 2018 - Loss detection and Congestion Control document to IESG
- Mar 2018 - Core Protocol document to IESG
- Nov 2017 - Working group adoption of Multipath extension document
- Feb 2017 - Working group adoption of QUIC Applicability and Manageability Statement
- Feb 2017 - Working group adoption of HTTP/2 mapping document
- Feb 2017 - Working group adoption of TLS 1.3 mapping document
- Feb 2017 - Working group adoption of Loss detection and Congestion Control document
- Feb 2017 - Working group adoption of Core Protocol document

# Planning

# Getting Started

1. Adopt Document(s)
2. Appoint Editor(s)
3. Gather Issue(s)
4. Start implementation / feedback cycle
5. Engage [ implementer, operator, transport, application ] communities

# Getting Started (2)

- Issues and draft source on GitHub
- [CONTRIBUTING.md](#)
- Meeting planning
  - [January Interim](#)
  - ~June, ~September 2017?

# Drafts

Discuss the suitability of the input documents for adoption by the WG for its chartered deliverables:

- draft-hamilton-quick-transport-protocol - presentation by Jana Iyengar (15 minutes)
- draft-iyengar-quick-loss-recovery - presentation by Ian Swett (10 minutes)
- draft-thomson-quick-tls - presentation by Martin Thomson (10 minutes)
- draft-shade-quick-http2-mapping - presentation by Mike Bishop (10 minutes)

... capturing any issues generated by discussion, and (time permitting) discuss them. The goal of this session is to get agreement on the room about a set of drafts to adopt.

We will also hear feedback from early implementers of the protocol.

# Parking Lot

- Brian Trammel, [presentation on draft-trammell-plus-statefulness](#) and how it might apply to QUIC (5 min talk, 10 min discussion)
- Martin Thomson, [presentation on The Endian Issue](#)
- Martin Thomson, [presentation on Identifiers](#)