Connection ID Protocol

Long headers have two connection IDs:
One for the recipient, one for the sender
One for routing, one for the routing value on the reverse path
Connection IDs are variable length
Short headers include only the recipient’s connection ID
Connection ID Protocol

Client (C) and Server (S)

Initial: Dst=R, Src=CCID

Version Negotiation: Dst=CCID, Src=R

Initial: Dst=R, Src=CCID

Retry: Dst=CCID, Src=SCID1

Initial: Dst=SCID1, Src=CCID

Handshake: Dst=CCID, Src=SCID2

Handshake: Dst=SCID2, Src=CCID

Short Headers w/ CCID

Short Headers w/ SCID2

R is random (8 octets+)

Echoing R is used to demonstrate return routeability for Version Negotiation packets.

Client picks CCID. Server adds CCID to all packets.

Server picks SCID. Client uses SCID for all subsequent packets.

Server can send a different SCID value on Retry for re-routing the handshake.

CCID and SCID are variable length and may be 0 octets.
Long Header Invariants (old)

- Bit 0 = 1 = long
- Connection ID
- Version
- ???
Long Header Invariants (proposed)

- Bit 0 = 1 = long
- Destination and Source Connection ID Lengths
- Destination Connection ID
- Source Connection ID
- Version

Two connection IDs. Each variable length.
QUIC Short Header Changes

- Bit 0 = 0 = short
- Bit 1 = ? = version-specific

Destination Connection ID

Destination Connection ID is variable length, but no explicit length is included.
Stateless Reset

Stateless reset breaks for clients that rely on connection ID

A server that loses state can’t set the correct Destination Connection ID on the stateless reset packet

Advise setting a random connection ID, with two problems:

- Stateless reset might be recognizable as such
- Stateless reset might not arrive at the client

Proposal: stateless reset is only an optimization, so this is OK
Details and so forth

PR #1151 creates two connection IDs

PR #1167 moves the Version field

Version Negotiation changes too, but not fundamentally

Still long w/ version=0

Handshake keys sometimes use zero-length inputs

No server address validation on that round trip

But that only happens after Retry, which can be validated