First Octet

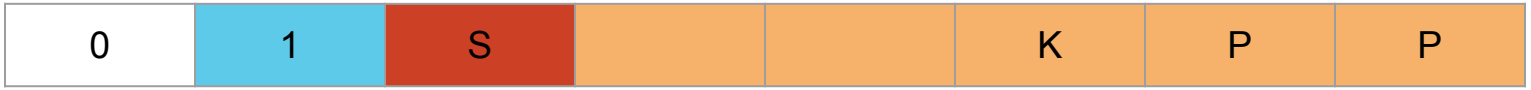
QUIC, IETF 103, November 2018

Martin Thomson

Discussed in NYC

Initial, 0-RTT, Handshake, Retry

1-RTT



Common

One header type bit

1 = long, 0 = short

One “QUIC bit”

Lower bits are encrypted

Last two bits are packet number length

pn_length = ((packet[0] ^ e_mask) & 3) + 1

Long Header

No spin bit or key phase

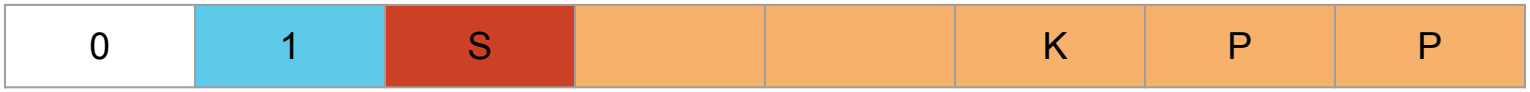
Two type bits: Initial(0), 0-RTT(1), Handshake(2), Retry(3)

Encrypt the rest

Two spare bits must be zero before encryption

Negotiate the use of other values if you like

Short Header



Spin bit (if accepted, spare and encrypted otherwise)

Spare bits must be zero before encryption

Key phase is before packet number length

Note: packet number encryption key can’t be updated

#1575 - Packet Number Encryption Sampling

Current:

start = min(1 + len(connection_id) + 4, len(packet)-16)
sample = packet[start:start+16]

Proposed (but still needed?):

start = ~~min(~~ 1 + len(connection_id) + 4 ~~, len(packet)-16)~~

Pad so that the sample is always 16 bytes, that is:

len(frames) + len(packet number) >= 4