Transport Services API for QUIC

draft-pauly-quic-interface-00

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TAPS
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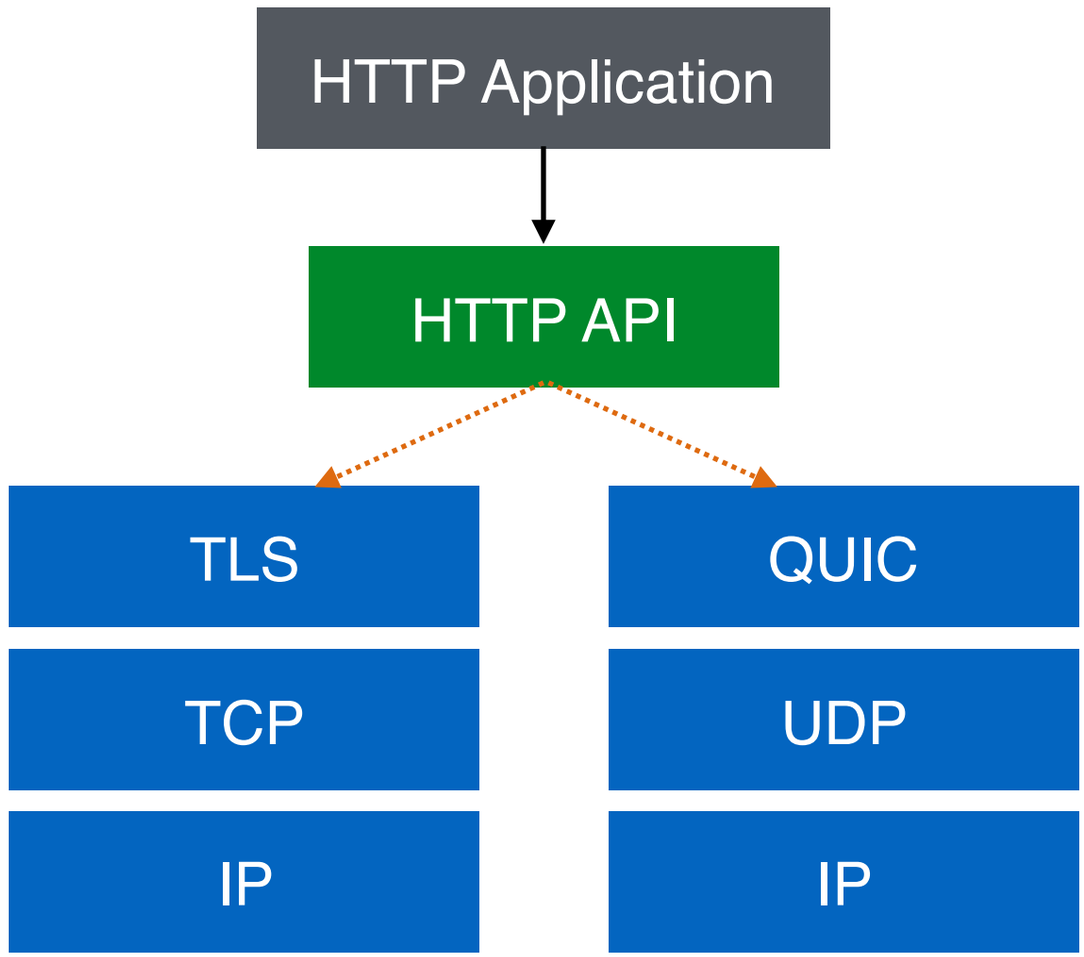
Goals for a QUIC API

Make it easy to transition clients to QUIC

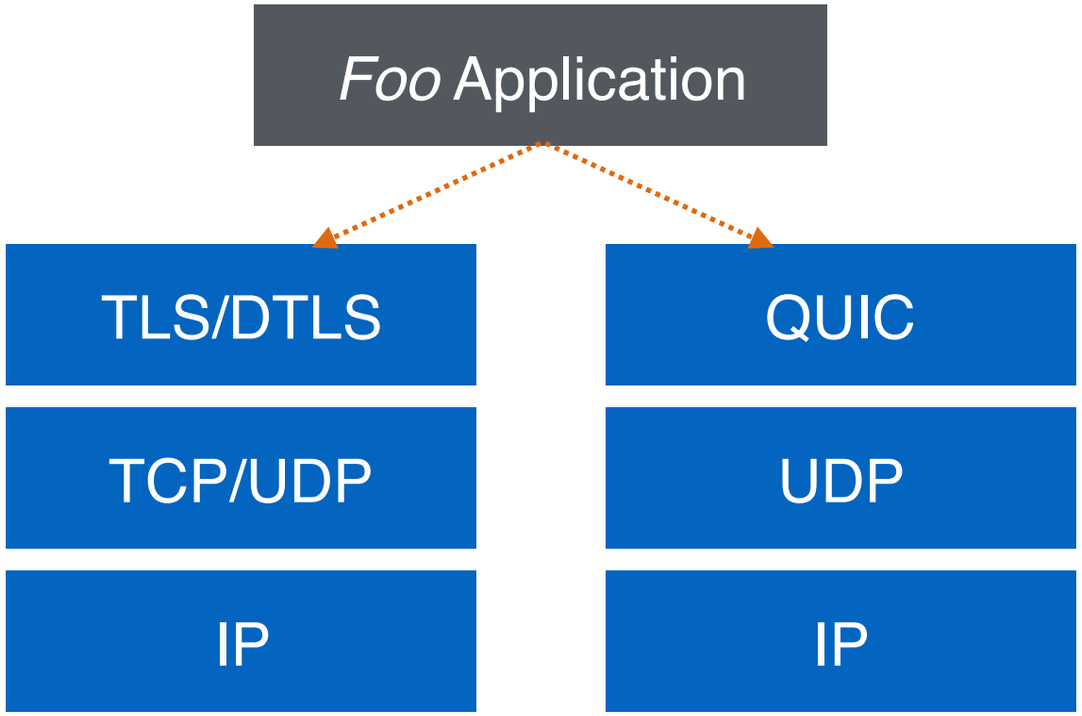
- Racing and fallback provided by implementation
- Common API surface between QUIC and TCP-based solutions

Expose novel transport features (0-RTT, multistreaming)

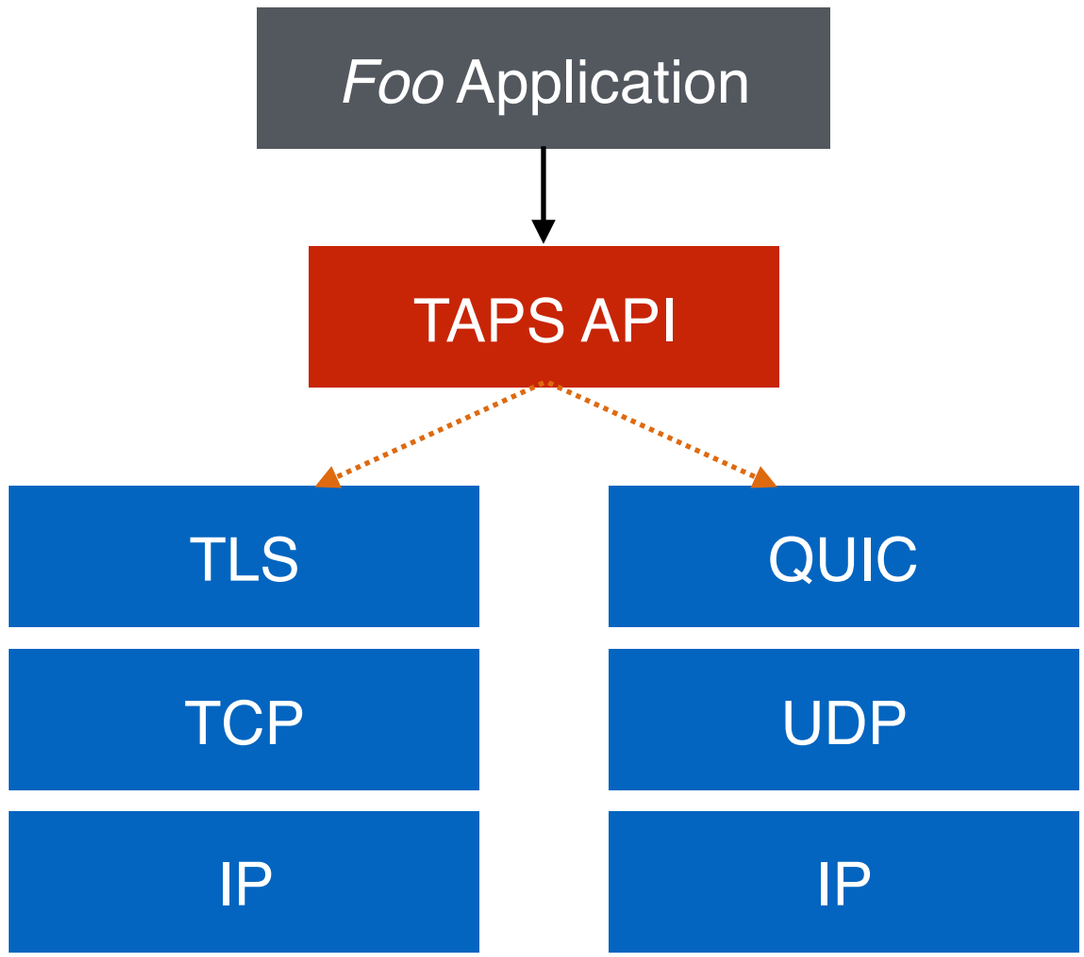
Transitioning Clients to QUIC



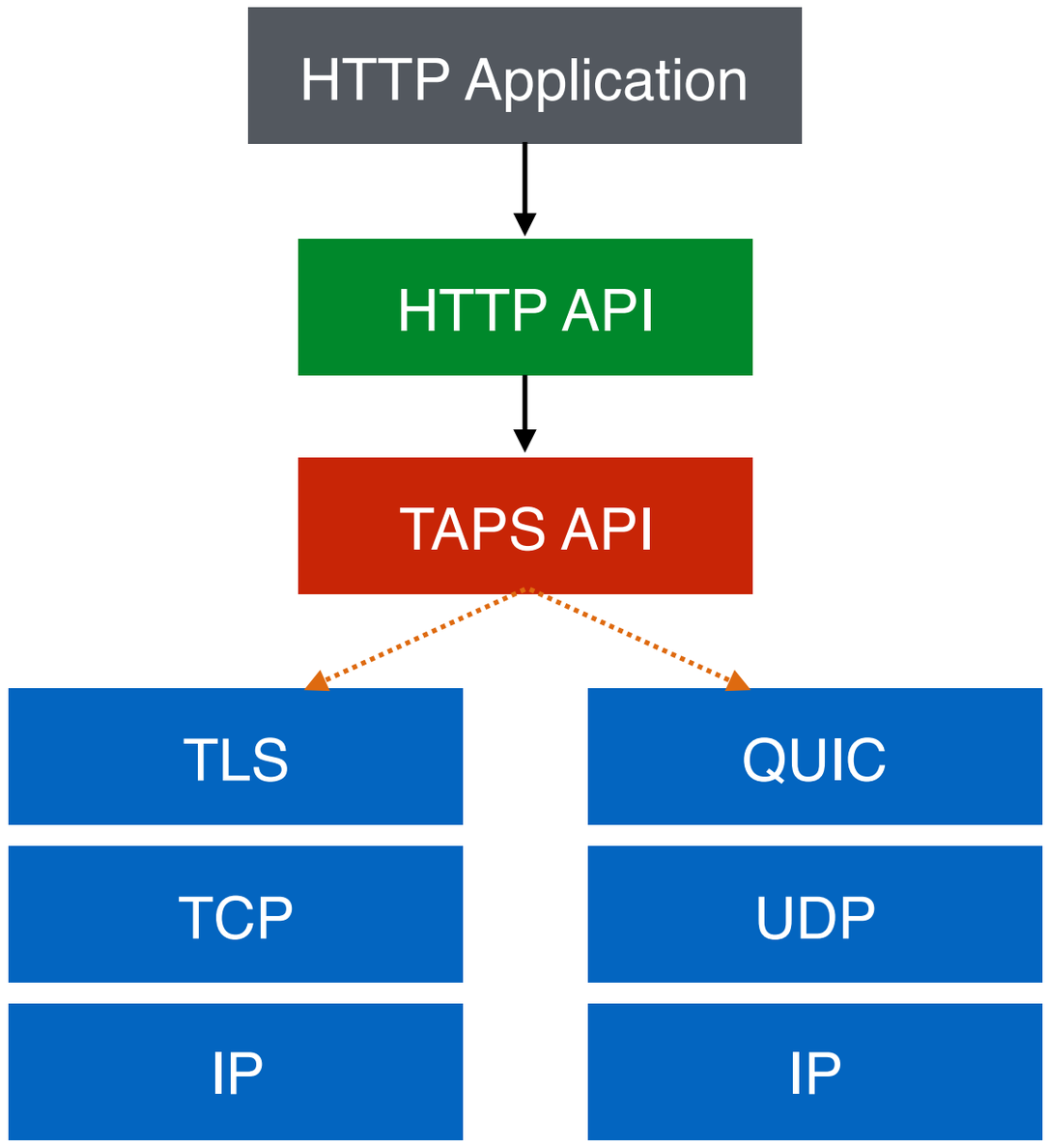
Transitioning Clients to QUIC



Transitioning Clients to QUIC



Transitioning Clients to QUIC



Models for using QUIC

As a TCP-style stream

Use only one stream in a connection

Benefit from:

- Faster secure handshake
- 0-RTT support
- Path migration
- Extensible transport parameters
- More complete privacy and authentication

Models for using QUIC

As a message channel

Consume a stream for each application message

Benefit from:

- All connection-level benefits
- Eliminating head-of-line blocking between messages
- Explicit uni-directional vs bi-directional streams provide “reply” semantics

Models for using QUIC

As a tunnel for several streams

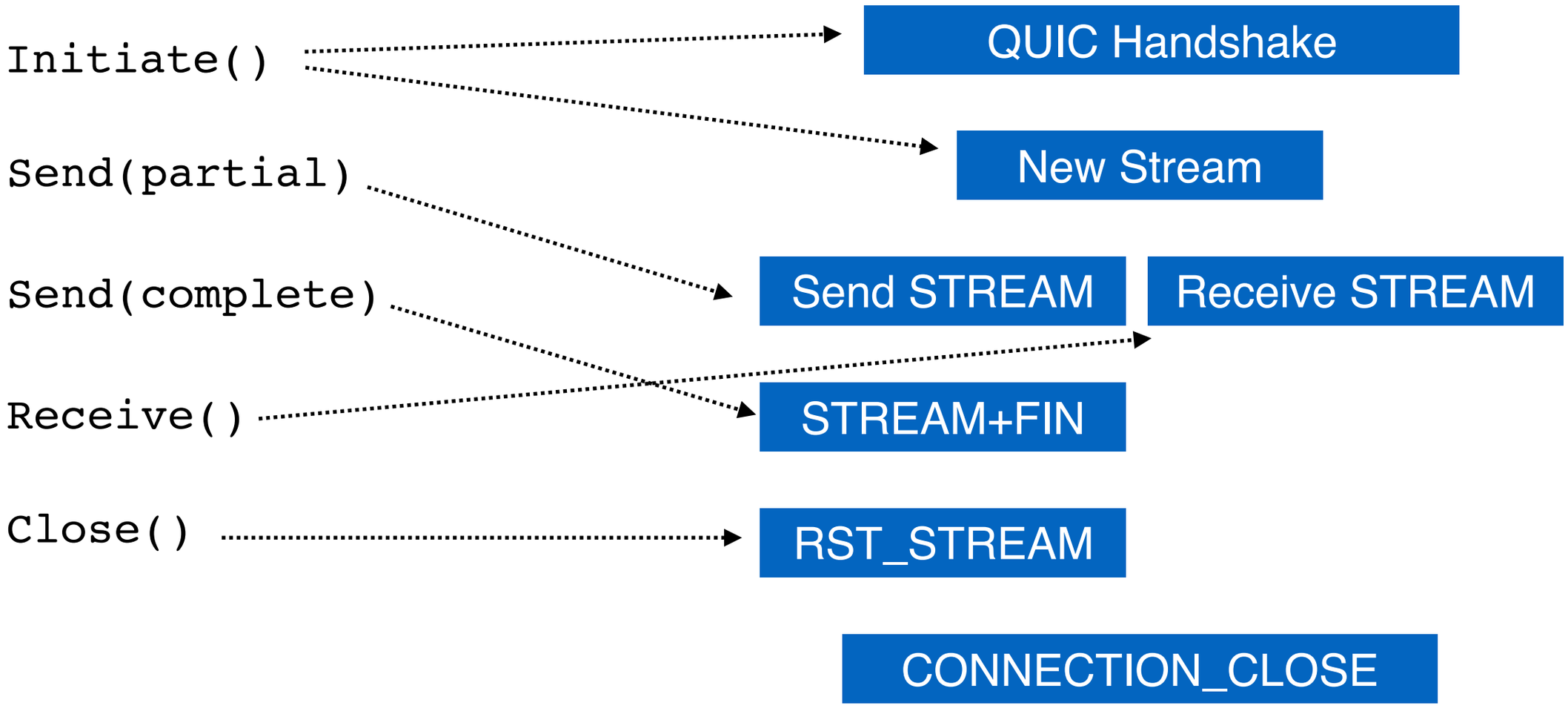
Use many long-lived streams

Benefit from:

- Shared security and authentication context between many streams
- Unreliable extensions can allow parallel unreliable and reliable data within a connection

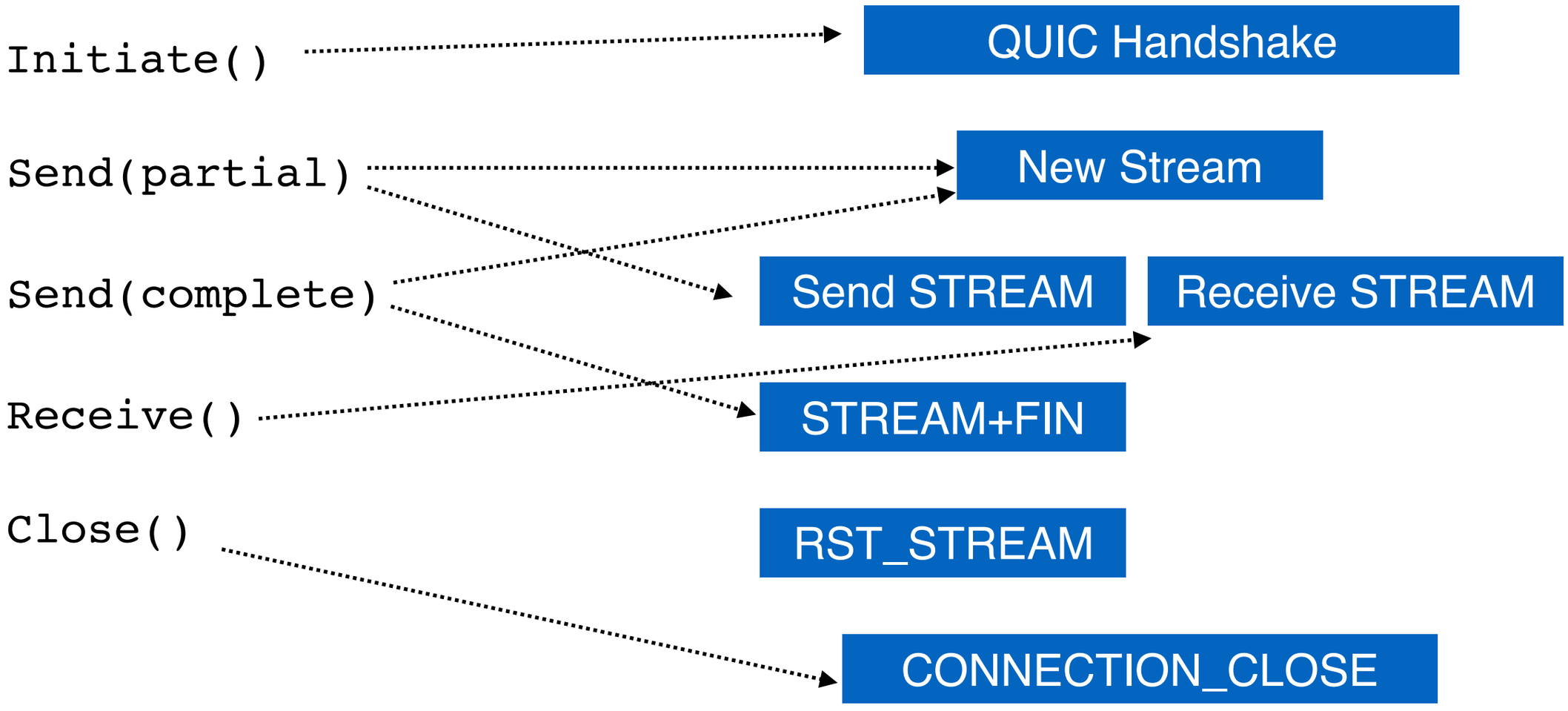
“Stream” Mode

Transport connection as QUIC stream



“Connection” Mode

Transport connection as QUIC connection



Implementation Considerations

Even if both models may be presented to an API client, implementation should be the same

“Stream” mode has more complete expressivity

- One caveat is implicit stream opening

Generally, build “Connection” on top of “Stream”

Same two models can be used for other multi-streaming transports, like HTTP/2