Opportunistic TCP-AO with TLS

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Context

- TCP-AO [RFC5925] provides integrity protection and authenticity to TCP packets.
- Cryptographic keys (MKTs) are set up out of band.
- When a TLS session is established over a TCP connection, there is an opportunity to derive secure TCP-AO keys from the TLS handshake.
- The draft proposes a way to achieve it.
Example of use

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- The client includes the AO TLS extension to negotiate the authentication algorithm and KDF.
- The server prepares the MKT for subsequent client packets.
- The client can protect its packets and verify server packets.
Use-cases

- BGP sessions was one original use-case of TCP-AO [RFC5925]
  - BGP can benefit from this opportunistic mode as well, see draft-wirtgen-bgp-tls.
- Any long-lived TCP connections using TLS can benefit from this mode
  - HTTPS
  - DoT
Future document updates

- Discuss interactions with other TCP extensions:
  - TCP Fast Open

- Discuss interactions with other TLS mechanisms:
  - 0-RTT and pre-shared keys

- Define a way to renew the MKT on long-lived connections.