

ATS QUIC Project

2018.11

Overview

QUIC

- New secure transfer protocol on UDP
 - TLS 1.3
 - 0-RTT
 - Flow control
 - Loss detection
 - Congestion control
 - Stream multiplexing
 - Version negotiation
 - Connection migration



Project status

- Active developers: 3
- Target version: 9.0
- Implemented draft: QUIC draft-15 + QPACK draft-02
 - Interop result last week is not bad
 - <https://github.com/quicwg/base-drafts/wiki/9th-Implementation-Draft>
- Changes: +35,797 lines, 150+ new classes just for QUIC
 - <https://github.com/apache/trafficserver/pull/2342>

Issues

Issues

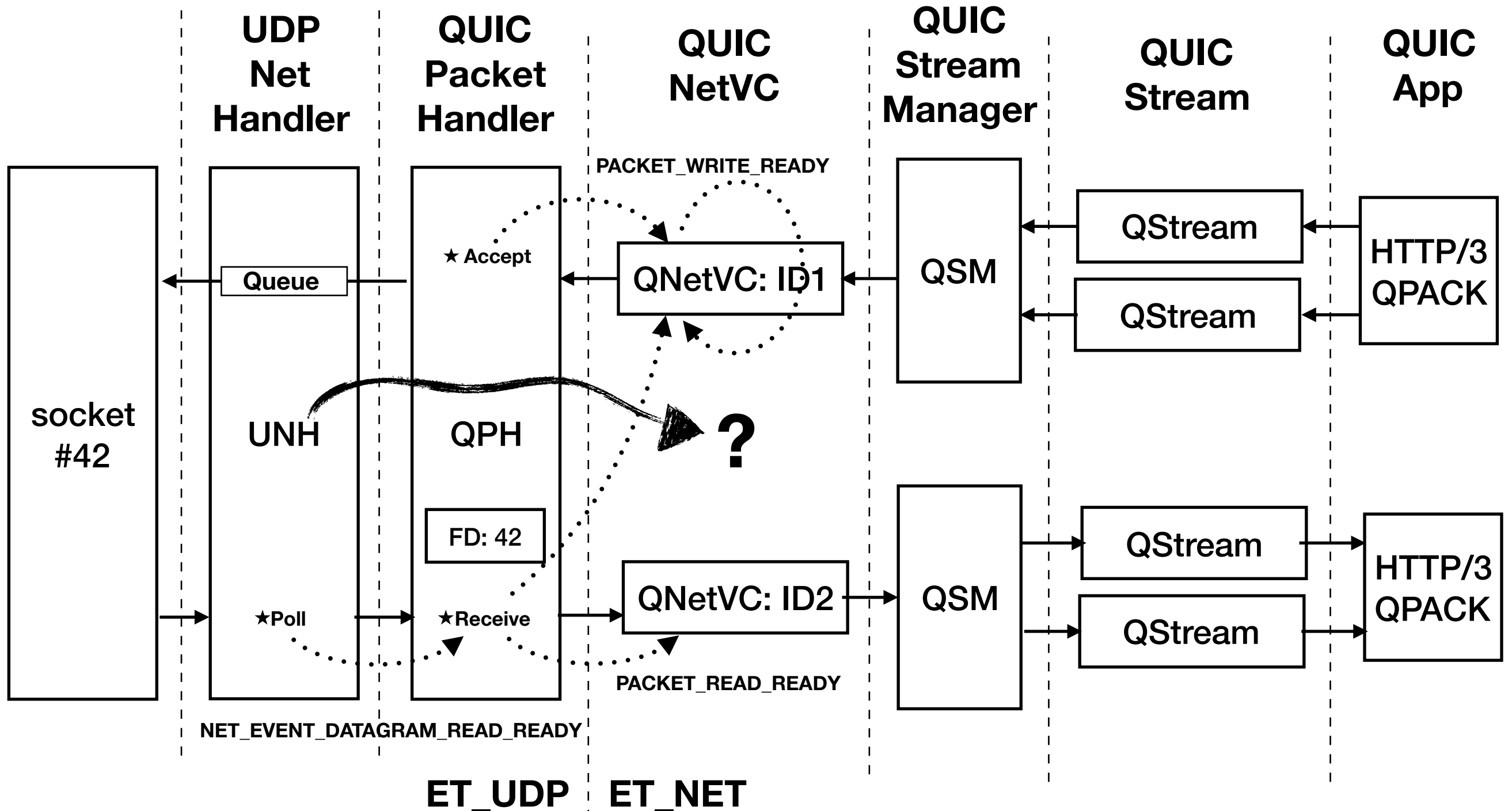
- Open issues: 45
 - <https://github.com/apache/trafficserver/issues?q=is%3Aissue+is%3Aopen+label%3AQUIC>
- Actionable items in this Hackathon: 18
 - https://docs.google.com/spreadsheets/d/1LIWOA3VE0Gp71HZYbk0A_iHyUvfV/k2polxfGndp20zI/edit?usp=sharing

Major blockers

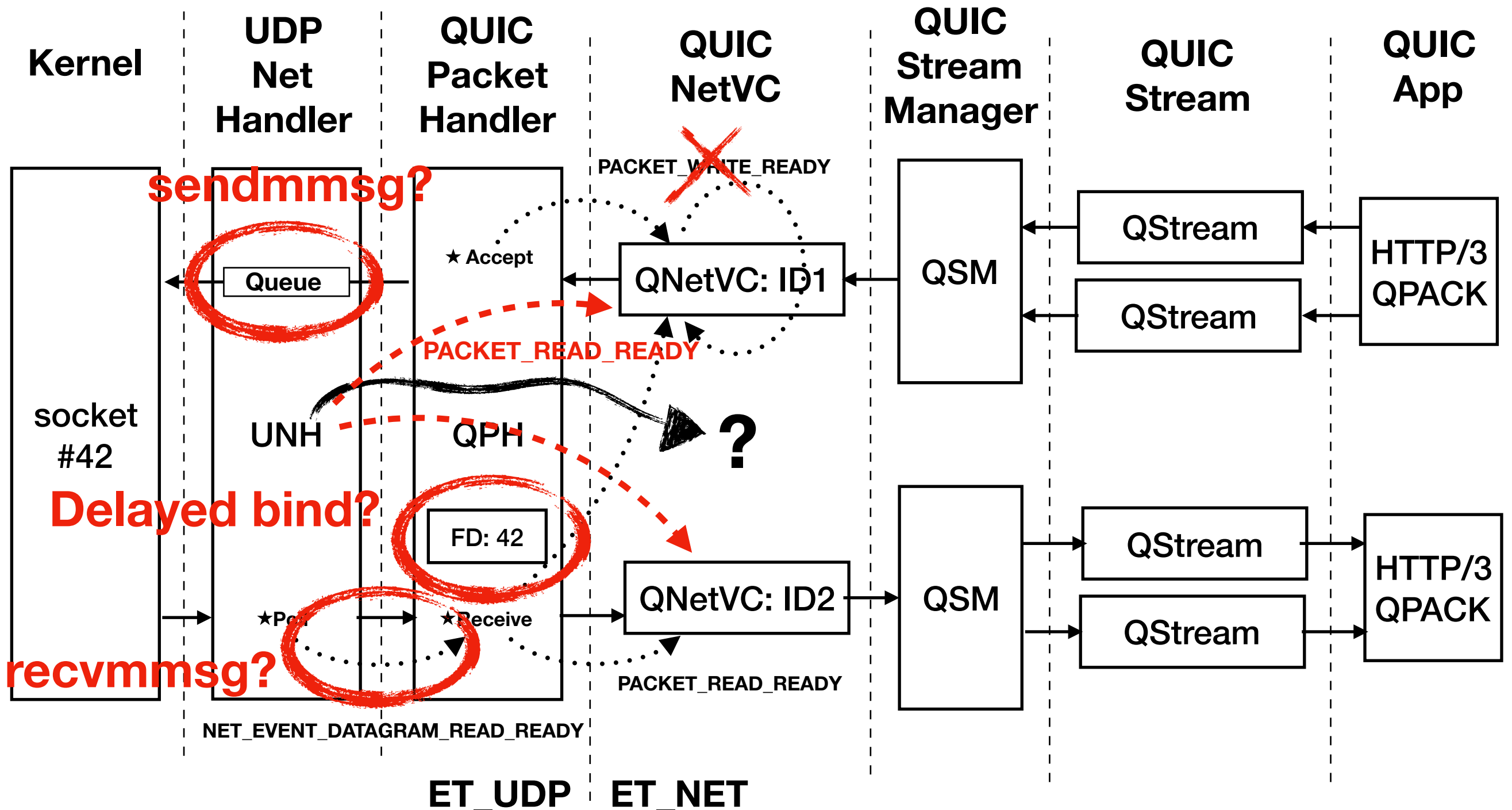
- Performance
 - Terribly slow somehow
- OpenSSL
 - Needs a patch (cannot use the official releases)
- ATS Integration
 - Lacks metrics, logs, TS API impl.
- HTTP over QUIC (HTTP/3)
 - Not implemented

Design

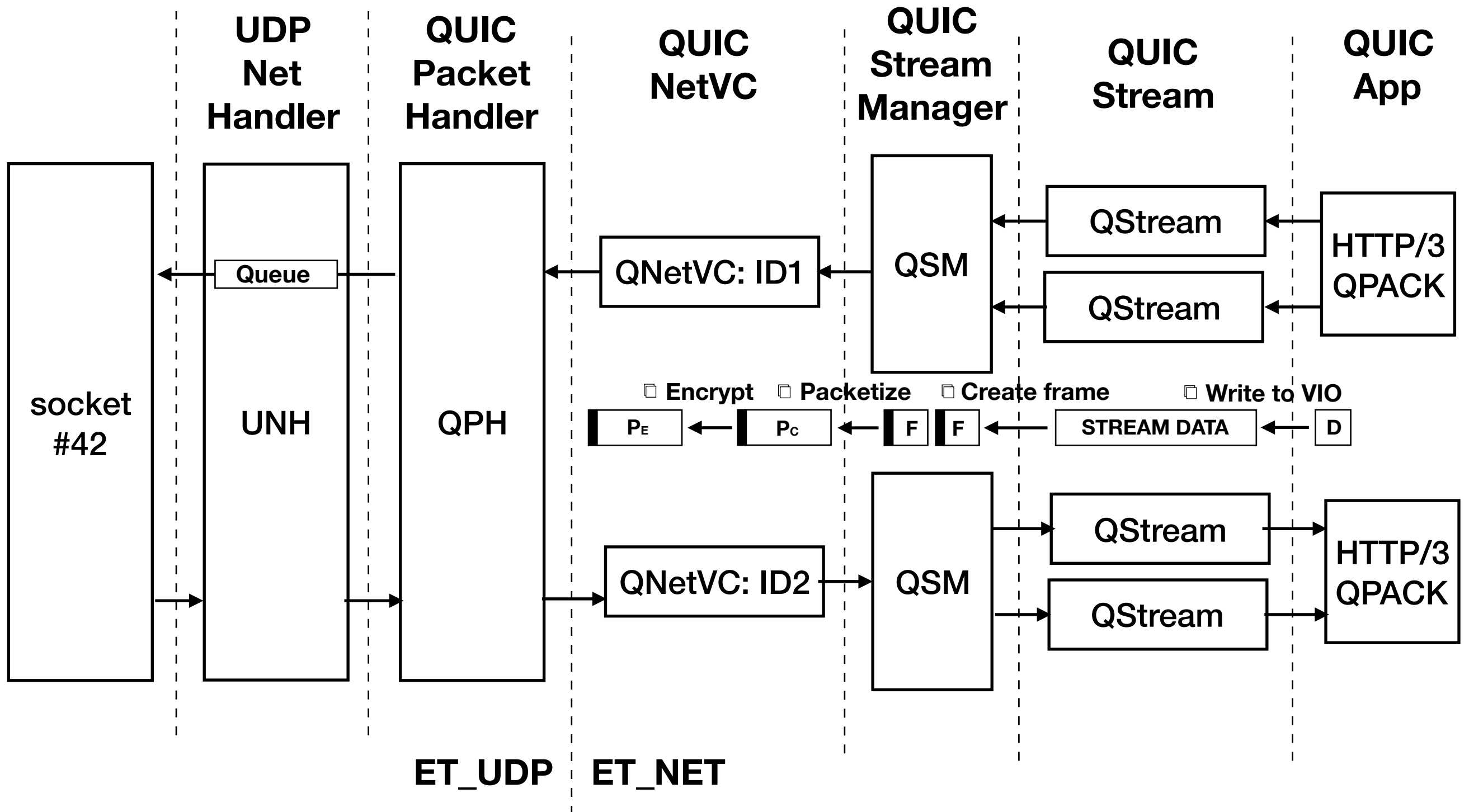
Packet Handling



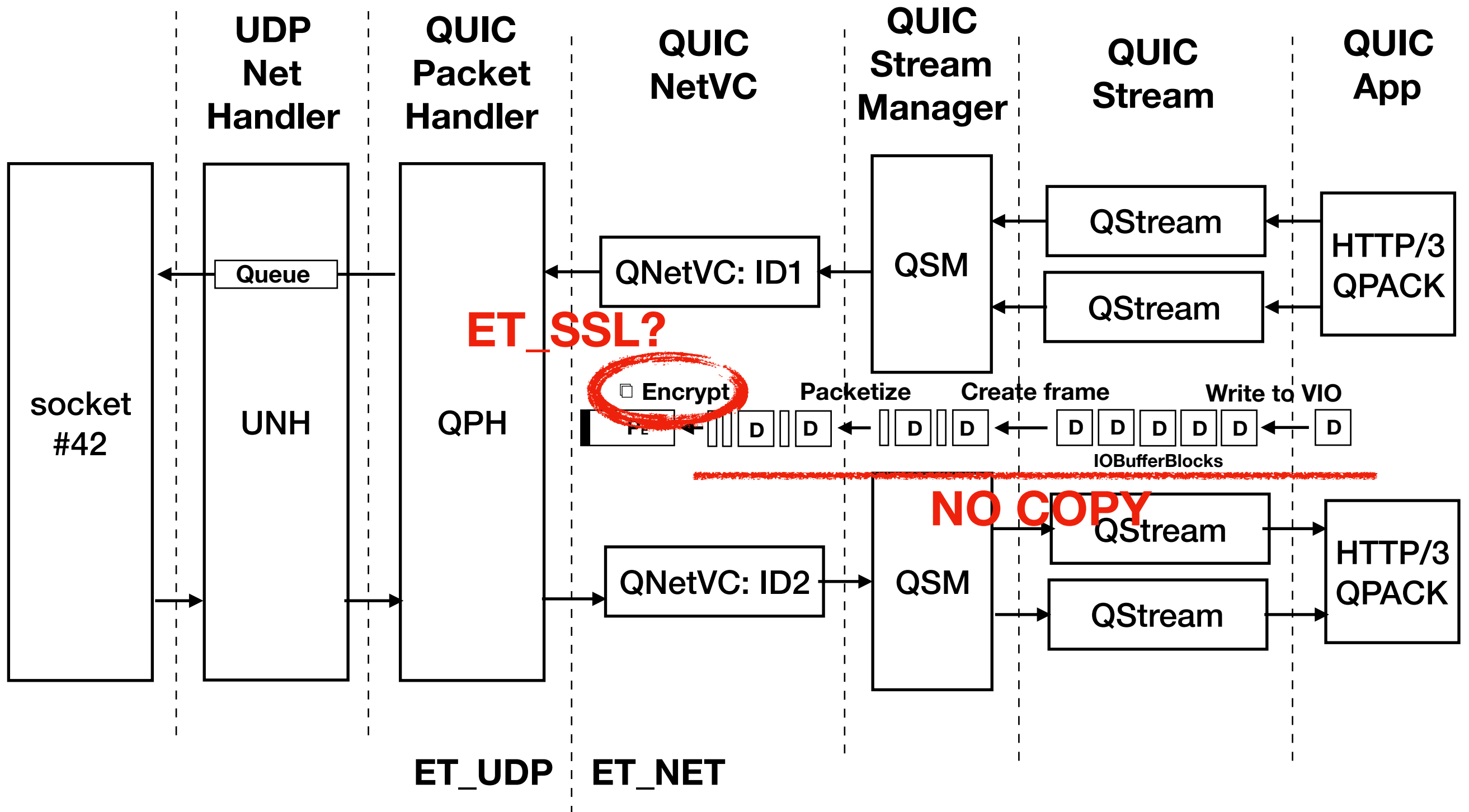
Packet Handling



Data passing



Data passing



Small stuff

- Object oriented
 - Language: C++ 90%, C 10%
 - Use interfaces but not concrete objects
 - Appropriate access modifiers (public vs private)
- Data containers
 - Uses some STL containers to implement it quickly
 - `unique_ptr` & `shared_ptr` (not working very well)
 - In-house memory allocator
 - In-house containers

EOP