[qlog]

structured event logging

the X-Files update

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IETF 115

The QUIC-hat Wearing Man

https://www.ietf.org/archive/id/draft-ietf-quic-qlog-main-schema-04.html
https://www.ietf.org/archive/id/draft-ietf-quic-qlog-quic-events-03.html
https://www.ietf.org/archive/id/draft-ietf-quic-qlog-h3-events-03.html
https://mailarchive.ietf.org/arch/msg/quic/imdP3txmInkn3I2uuVClYWPeMwk/

Security and Privacy Considerations

- Old approach (IETF 113)
  - Extensive guidance:

  - Per-field sensitivity indicators
  - Anonymization strategies per data type

- BUT: this is a deep rabbit hole
  - Little existing guidance in IETF
  - Anonymization alone is not enough
  - Requirements depend on use case / deployment

  - *Getting this **right** would substantially delay qlog*

Old discussion: https://github.com/quicwg/qlog/issues/142

Security and Privacy Considerations

- New approach (IETF 115+)
  - Only base guidance in qlog:
  - Highlight privacy risk
  - Provide (non-exhaustive?) examples of sensitive qlog
  - Touch upon tips and tricks for managing risk
- Start parallel effort for detailed recommendations
  - TBD
  - Broader than just qlog
  - Analogue to e.g., RFC6973 but for logs/captured data

Old discussion: https://github.com/quicwg/qlog/issues/142
New discussion: https://github.com/quicwg/qlog/issues/259
Current text: https://www.ietf.org/archive/id/draft-ietf-quic-qlog-main-schema-04.html#name-security-and-privacy-consid

Applying Cunningham’s Law

“IPv6 is worse for privacy”

“use .json instead of .qlog to confuse hackers”

“qlogs MUST be stored on a **blockchain**”

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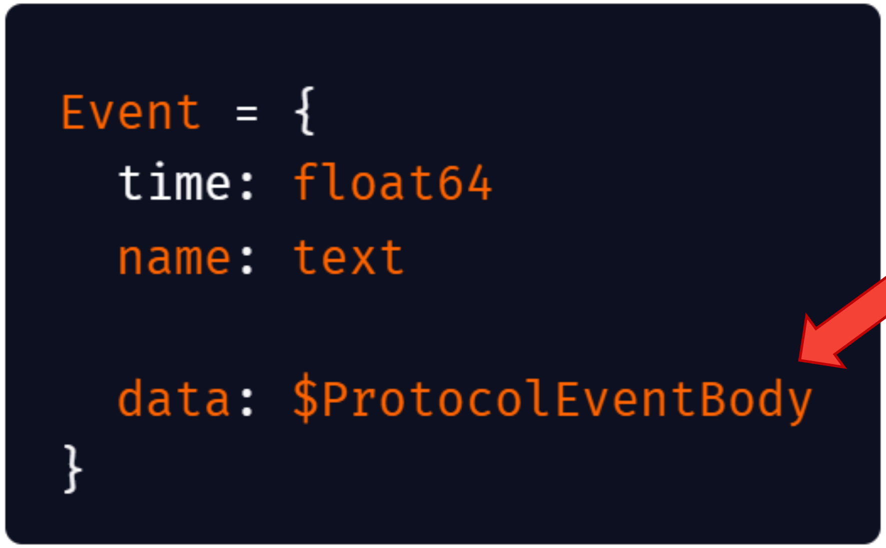
Extensibility

- Goal: add new qlog definitions later on in new documents
- Difficulty: CDDL definitions
    - Ideally: merge base + extension documents into 1 big CDDL schema

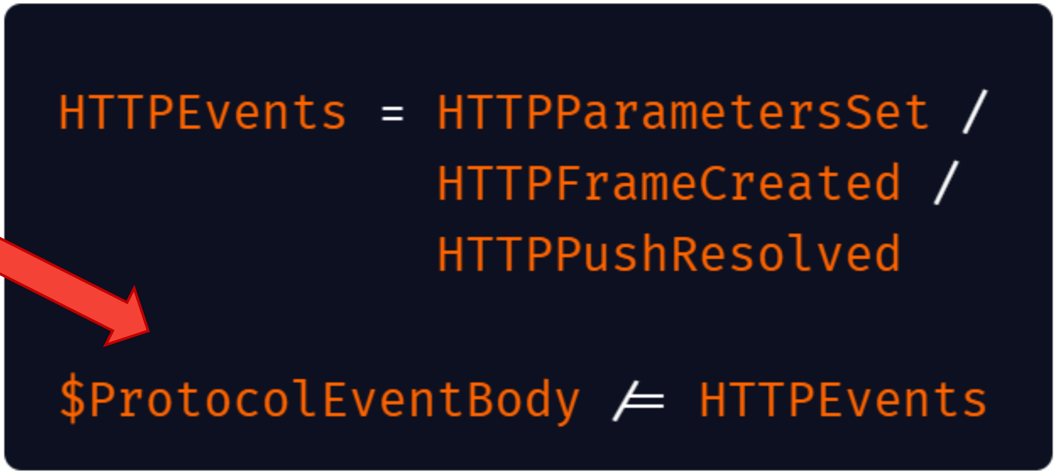
Main schema



```
Event = {
  time: float64
  name: text

  data: $ProtocolEventBody
}
```

HTTP/3 document



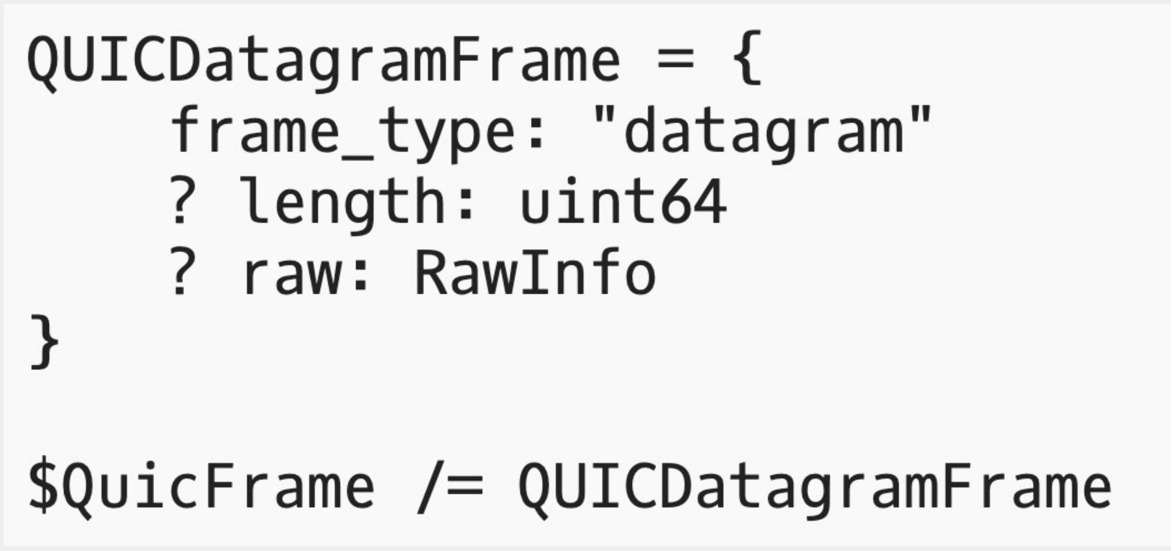
```
HTTPEvents = HTTPParametersSet /
             HTTPFrameCreated /
             HTTPPushResolved

$ProtocolEventBody //= HTTPEvents
```

Extensibility

- Goal: add new qlog definitions later on in new documents
- Difficulty: CDDL definitions
  - Ideally: merge base + extension documents into 1 big CDDL schema

- Test it out using QUIC and H3 **DATAGRAM** frames



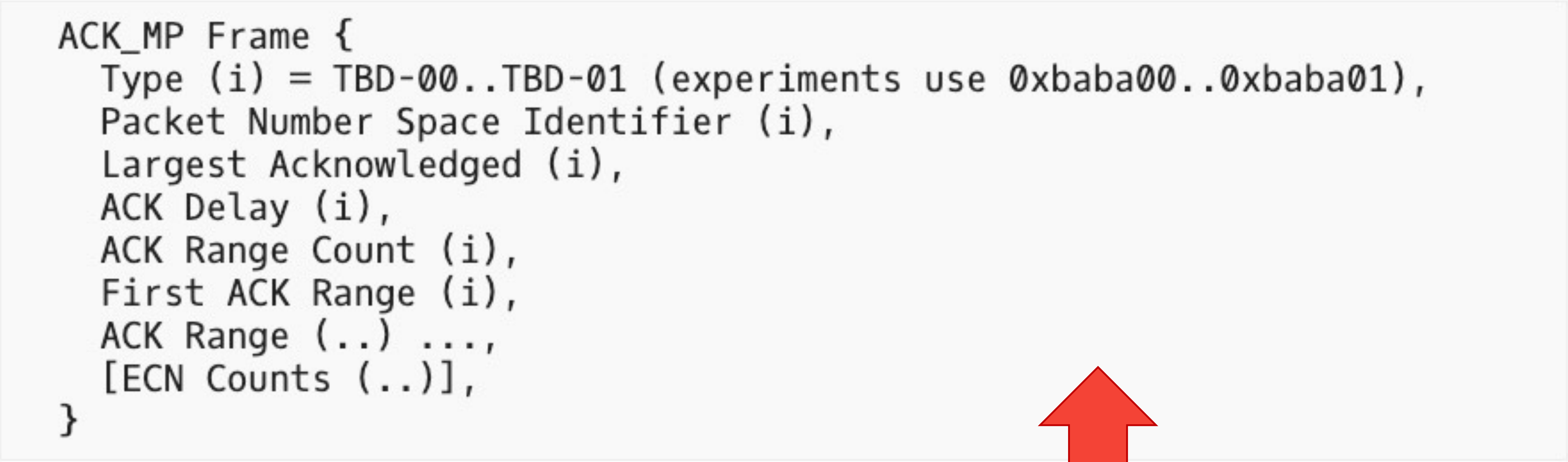
```
QUICDatagramFrame = {
    frame_type: "datagram"
    ? length: uint64
    ? raw: RawInfo
}

$QuicFrame /= QUICDatagramFrame
```

- Also need transport parameter
- Also needs H3 SETTING
- ***Where does it end?***

https://github.com/rmarx/draft-marx-quic-qlog-datagram
https://github.com/quicwg/qlog/issues/261

The Truth Is (not?) Out There



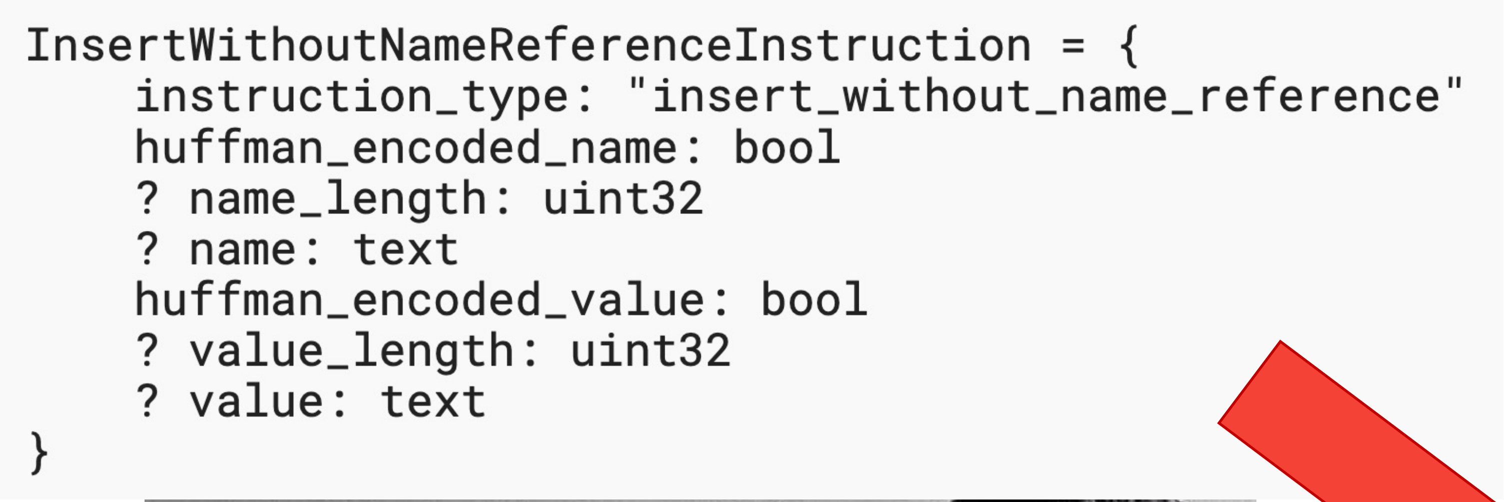
```
ACK_MP Frame {
  Type (i) = TBD-00..TBD-01 (experiments use 0xbaba00..0xbaba01),
  Packet Number Space Identifier (i),
  Largest Acknowledged (i),
  ACK Delay (i),
  ACK Range Count (i),
  First ACK Range (i),
  ACK Range (..) ...,
  [ECN Counts (..)],
}
```

- Make everything an extension point?
- Have new docs re-define/overwrite old stuff?
- Don’t have *everything* in CDDL?
- …

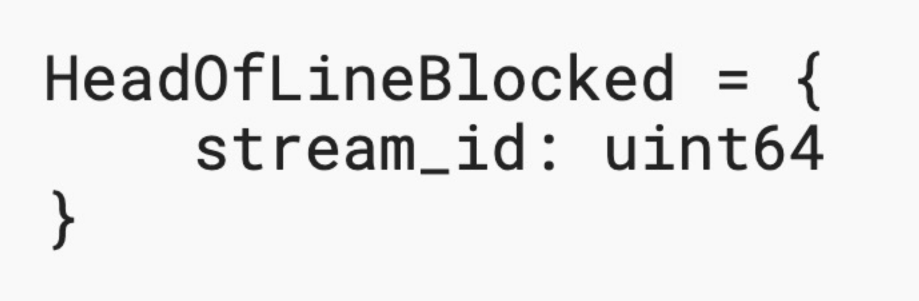
https://github.com/rmarx/draft-marx-quic-qlog-datagram
https://github.com/quicwg/qlog/issues/261

QPACK

- Plan to redefine events: Help appreciated!



```
InsertWithoutNameReferenceInstruction = {
    instruction_type: "insert_without_name_reference"
    huffman_encoded_name: bool
    ? name_length: uint32
    ? name: text
    huffman_encoded_value: bool
    ? value_length: uint32
    ? value: text
}
```



```
HeadOfLineBlocked = {
    stream_id: uint64
}
```

https://github.com/quicwg/qlog/issues/199

QPACK

- Thinking of splitting H3 and QPACK events into separate documents

https://github.com/quicwg/qlog/issues/262

Some remaining design issues

- Provision **something** for MultiPath?
  - Define path_id field, can also be useful for connection migration?

ECN events: https://github.com/quicwg/qlog/issues/212
Send blocking events: https://github.com/quicwg/qlog/issues/132
Multipath support: https://github.com/quicwg/qlog/issues/134
Connection Migration approach: https://github.com/quicwg/qlog/issues/79
ConnectionState definition: https://github.com/quicwg/qlog/issues/239

Merci!