

The
qpack_static_table_version
TLS extension

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Overview

- What is the QPACK static table?
- What's wrong with the QPACK static table?
- What is the "qpack_static_table_version" TLS extension
- Discussion

What is the QPACK static table?

- QPACK is the HTTP/3 compression system for headers/trailers
- Comprises static and dynamic tables
 - Static table - encodes common header field or field/value combinations
 - `:method` `GET`
 - `strict-transport-security` `max-age=31536000; includesubdomains`
 - `If-Modified-Since`
 - Dynamic table - encodes less-common combinations
 - May be request-specific or simply 'less-common'
- Static table allows for excellent compression (e.g. 61 bytes -> 2 bytes)
- Common static table is referenced by client and server

Limitations of QPACK static table

- A single QPACK static table is defined in [RFC 9204](#) as Appendix A
- Created in 2018, based on a representative sampling of web traffic
- Includes some invalid values
 - May still be worthwhile to include if they are frequently passed
- Doesn't allow for 'upgrades'
 - Additions to table for new common headers e.g. `Accept-CH`
 - Reordered table to ensure most common elements are near the beginning
- Over time, static table will become 'stale'
 - Other vendors may choose to create their own copies

The "qpack_static_table_version" TLS extension

- A [proposed TLS extension](#) that clients and servers can use to negotiate on a version of the static table to use
- Runs 'before' HTTP, so table is known before request/response begins
- Relies on static table(s) being published in an IANA registry
 - Additions to existing table can be added to existing registry
 - New versions of the table (reordered etc.) have their own registry
- **Future-proofing** - defines a standard for all vendors to use
- **Avoids interoperability chaos** if vendors choose their own static table

Problems?

- Should it be a TLS extension?
 - Boundary crossing - this is an HTTP I-D
 - Maybe use ALPS/ALPN?
- Could it run early in HTTP (perhaps controlled via a header?)
- How big of a deal is table interoperability/staleness?

Discussion