TECHNISCHE UNIVERSITÄT BERLIN

Evaluation of HTTP/3 for Media Streaming

Philip Nys | Open Distributed Systems | Workshop 3 | July 11th 2023

Overview

- Warp-Up: Problem Statement
- Implementation Details
    - RUSH / QUICR / WARP (Rust)
    - WARP (Go)
- Results / Evaluation
- Demo
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- References

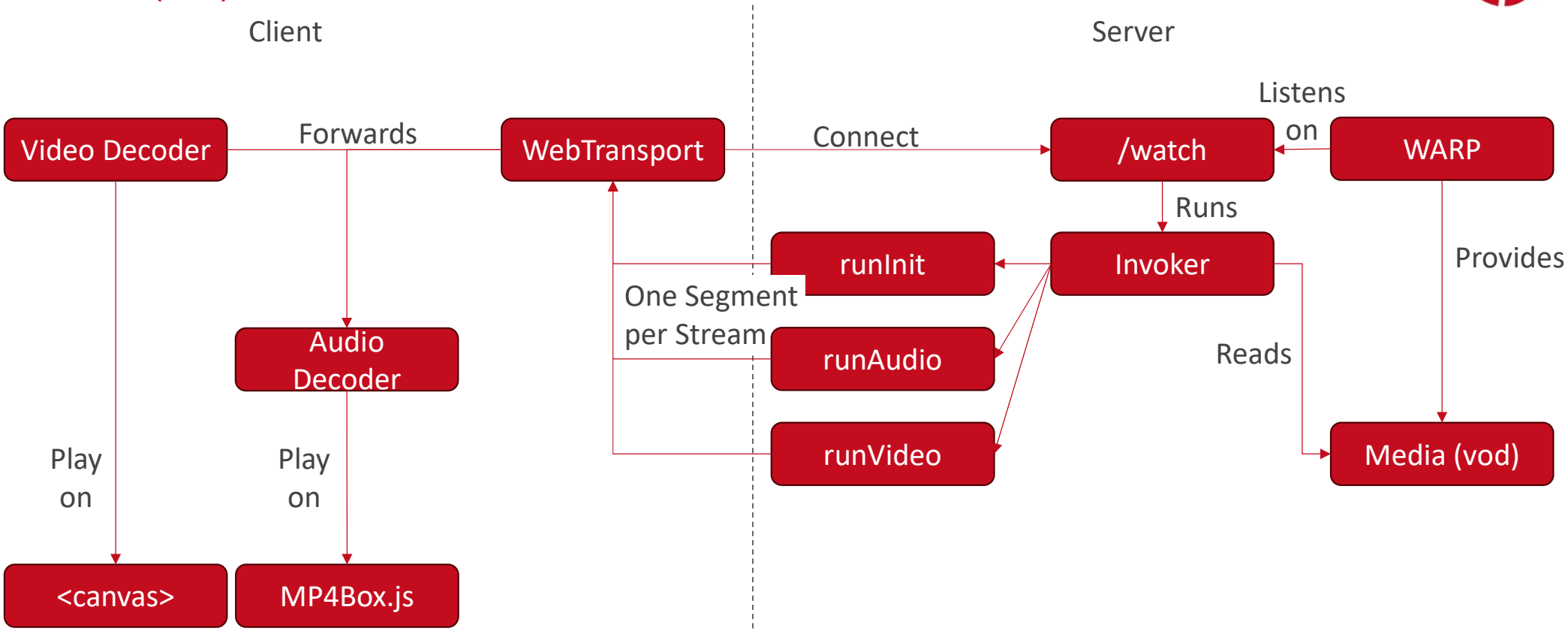
Warp-Up: Problem Statement

- Media Streaming makes up the majority of all Internet traffic
  - In 2017: **72%** [1]
- HTTP/3 aims to reduce latency, head of line (HOL) blocking and improve the user experience
  - Better stream multiplexing
  - Faster verification handshake [2]

Implementation Details
RUSH / QUICR / WARP (Rust)

- RUSH:
    - Unable to get video output on viewer side to work
- QUICR:
    - Build error persists, no solution found
- WARP (Rust):
    - Lots of changes happend with WARP repository
        - New server implementation in Rust
        - Rename to **Media over QUIC Transport (MOQT)**
    - Implementation very unstable, frequent WebTransport connections lost
        - ➔ Not suitable to run benchmarks for comparision with Go implementation

Implementation Details
WARP (Go)



Results / Evaluation

- WARP most prominent candidate for MOQ
- Transformed to Media over QUIC Transport (MOQT)
    - 1st July 2023: new IETF draft for MOQT[8]
    - Now supports a producer to publish data
    - Subscriber can consume said data
    - Designed to be highly scalable and for low latency

Same as previous workshop

Open TODOs until final submission

- README.md on GitHub[7]
- Documentation / Project Report

References

[1] M. Nguyen, D. Lorenzi, F. Tashtarian, H. Hellwagner and C. Timmerer, "DoFP+: An HTTP/3-Based Adaptive Bitrate Approach Using Retransmission Techniques," in *IEEE Access*, vol. 10, pp. 109565-109579, 2022, doi: 10.1109/ACCESS.2022.3214827.
[2] Divyashri Bhat, Rajvardhan Deshmukh, and Michael Zink. 2018. Improving QoE of ABR Streaming Sessions through QUIC Retransmissions. In Proceedings of the 26th ACM international conference on Multimedia (MM '18). Association for Computing Machinery, New York, NY, USA, 1616–1624. DOI:https://doi.org/10.1145/3240508.3240664
[3] https://github.com/facebookexperimental/webcodecs-capture-play
[4] https://github.com/kixelated/warp
[5] https://github.com/Quicr/qmedia
[6] https://w3techs.com/technologies/details/ce-httpsdefault
[7] https://github.com/ArckyPN/tu-berlin-awt-pj-ss23-http3
[8] https://datatracker.ietf.org/doc/draft-ietf-moq-transport/

Thank you for listening! Any questions?