Workgroup:	Faster-Than-Light Standardization Effort
Internet-Draft:	draft-ftl-specification-00
Published:	4 January 2021
Intended Status:	Informational
Expires:	8 July 2021
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Faster-Than-Light Streaming Protocl Specification

Abstract

With the demise of Microsoft's Mixer, the future of the Faster-Than-Light (FTL) streaming protocol has been left in doubt. As the Internet's first practical subsecond streaming protocol, several successors to Mixer have decided to re-implement FTL from the original SDK and notes. While Mixer's original FTL specification had a de-facto specification in the form of ftl-sdk, the source code was in-complete, and several aspects of the FTL were left undocumented.

In an effort to keep FTL viable and cross-service compatible, this specification denotes a canonical implementation of FTL, handshake protocols, WebRTC notes, and all relevant information as relating to FTL with the hope that FTL may still be continued as a vechile for low latency video streaming over the Internet.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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This Internet-Draft will expire on 8 July 2021.

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1. Introduction and Overview

This specification covers several components of the FTL protocol stream, and is primarily derieved from the implementation used at Mixer and the freely available source code in ftl-sdk. This document details the handshaking protocol known as Charon, the SRTP ingest behaviors, and defines a recommended ingest->endpoint streaming protocol, as well as notes in regards to implementation of the last mile WebRTC connections.

FTL was specifically designed with the following objectives in mind which is must handle at all times.

- Real-world 500 millsecond delay for streamer to receiver broadcast under normal cirmstances at 30 FPS or more
  - At the time of it's implementation, 720p streaming was considered the best possible for most users, however, advancements in technology have allowed for 1080p streaming.
- That FTL has be technology neutral; it should be able to use any video or audio codec as supported by WebRTC (or another last mile technology) independently. The original FTL implemntation used VP8 and Opus, later ones used H.264, keeping with the original intent.
- Use of standards based technology for use in a web browser with no additional software or downloads for viewers

2. Design Tradeoffs/Limtations

TBD

3. One-to-Many WebRTC

TBD

4. Charon Negotation Protocol

TBD

5. RTP Stream Negotation

TBD

6. Styx Protocol Ingest Behavior

TBD

7. Babel Transcoding Behavior

TBD

8. WebRTC Last Mile Negotations

TBD

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