

Low Overhead Container (LOC) MOQ Media Format

draft-ietf-moq-loc

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What is LOC?

Low Overhead Container Media Format

- Alternative to CMAF
- Based on WebCodecs
- Compact: minimal extra encapsulation and application overhead when interfacing with WebCodecs

Motivation: Why WebCodecs?

- Minimal overhead, no extra encapsulation
- EncodedAudioChunk / EncodedVideoChunk “internal data” is the raw elementary bitstream format of codecs without any encapsulation, so we use this directly as the LOC Payload.
- Referring to the WebCodecs Codec Registry avoids duplicating it in an identical IANA registry.
- Usable outside WebCodecs or a web browser.

Motivation: Why not CMAF?

- CMAF overhead is >100 bytes per frame
(can be much more depending on options)
- Prohibitive for audio, >100% overhead
- Complexity of nested header boxes
- Complexity of multi-frame packing options
(chunks, fragments, segments)
- Requires unnecessary parsing and encapsulation / de-encapsulation of media stream to find frame boundaries.

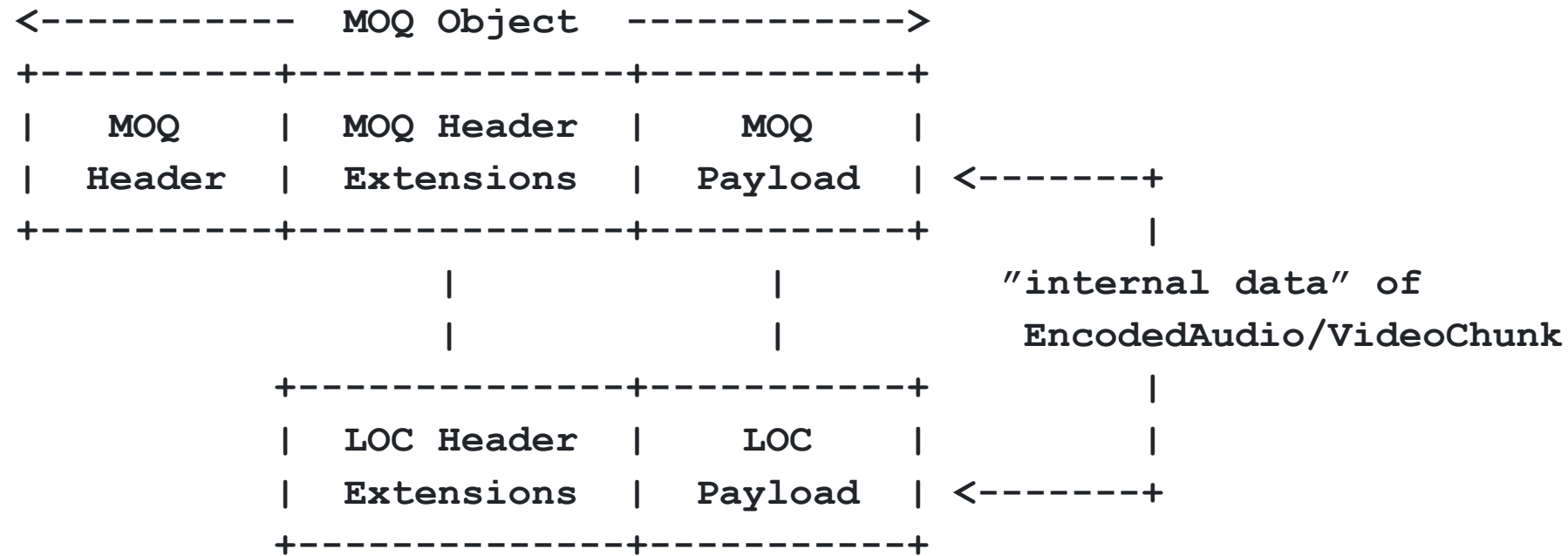
Changes in version -01

- Moved catalog sections to WARP draft

Suggested changes in -02

- Move metadata location
 - Remove existing object header extensions
 - Add new payload header extensions
 - Aligns with E2EE PR#1025 (merged)
 - Aligns with Track Headers PR#1176 (RFC)
- Consider CMAF wrapper in CARP as LOC extensions
- Fix odd/even extension types ([Issue #794](#))

Metadata in LOC Format version -01

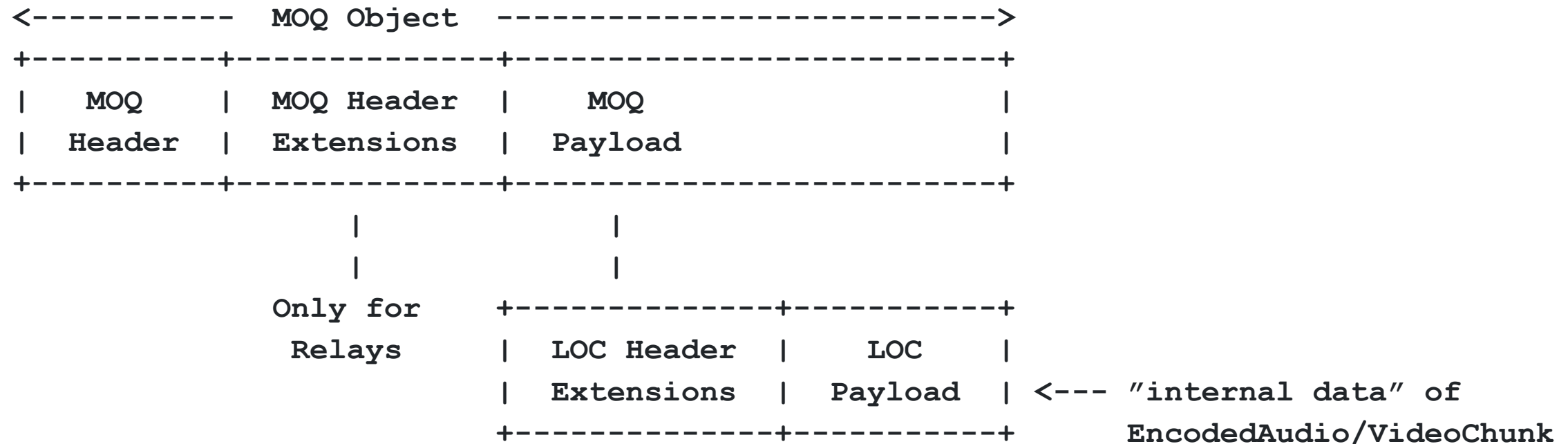


LOC Header Extensions = some MOQ Object Header Extensions

LOC Payload = all MOQ Object Payload

LOC Payload = "internal data" of EncodedAudio/VideoChunk

Metadata suggested in LOC version -02



LOC Header Extensions = start of MOQ Object Payload

LOC Payload = rest of MOQ Object Payload

LOC Payload = "internal data" of EncodedAudio/VideoChunk

CMAF / CARP

- WARP proposes CMAF/CARP separately from LOC
- CMAF can be layered over LOC using extensions
- LOC would need to relax restriction 1 object = 1 frame
- CARP allows 1 object = 1+ CMAF Fragments/Chunks
- Is this worth doing? Or keep LOC separate from CMAF?

Open Issues

- WebCodecs issue: fix new avc3/hev1 formats

WebCodecs Issue

- WebCodecs video format options “avc” (was “avcc”) and “hevc” versus “annexb”. This really means “mp4” versus “annexb”.
- Old MP4 codec strings (“avc1”, “hvc1”) define 2 separate aspects:
 1. Parameter sets out of band (“extradata”) versus in band.
 2. Length prefix versus start code prefix before each NAL unit.
- New MP4 codec strings (“avc3”, “hev1”) change 1 but not 2.
 1. Parameter sets in band or out of band (“extradata”).
 2. Length prefix versus start code prefix before each NAL unit.
- **Need to fix WebCodecs support for new MP4 avc3/hev1.**
 - Properly support new “avc3” / “hev1” formats with length prefixes and in band parameter sets, while still allowing out of band (“extradata”).