

# **Low Overhead Container (LOC) MOQ Media Format**

## **draft-mzanaty-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.

# Resolved in version -05

- Support both MP4 and AnnexB video formats
  - Parameter sets can be in band or out of band
    - Recommend in band (new MP4 avc3/hev1)
    - Allow out of band (old MP4 avc1/hvc1)
      - Config extension defined for “extradata”
  - NAL units can be prefixed with lengths or start codes
    - Recommend length prefix (MP4)
    - Allow start code prefix (annexB)

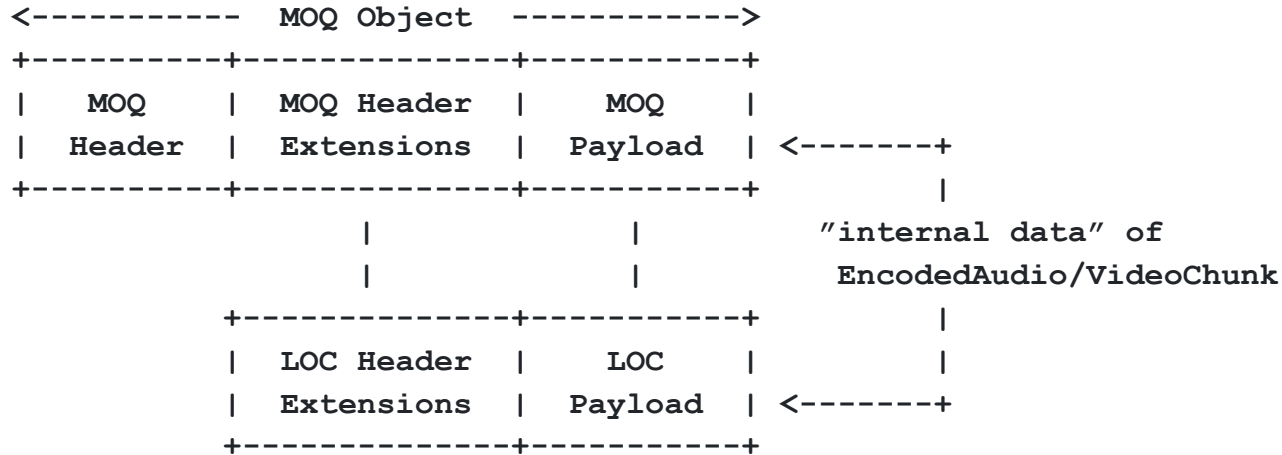
# Video Parameter Sets and Prefix

- 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 resolve future direction for both WebCodecs and LOC.**
  - Ideally, properly support and recommend new “avc3” / “hev1” formats with length prefixes and in band parameter sets, but allow all other variants.

# Open Issues

- Metadata location
  - Use existing object header extensions
  - Add new payload header extensions
- WebCodecs issue: fix new avc3/hev1 formats
- Move catalog to WARP draft
- Fix odd/even extension types ([Issue #794](#))
- Rename from LOC to WebCodecs Format (WCF)?
- Adopt as WG item?

# Metadata in LOC Format version -05



LOC Header Extensions = some MOQ Object Header Extensions

LOC Payload = all MOQ Object Payload

LOC Payload = "internal data" of EncodedAudio/VideoChunk