MOQ Files

Serialization of MOQ objects to files

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Core Concept

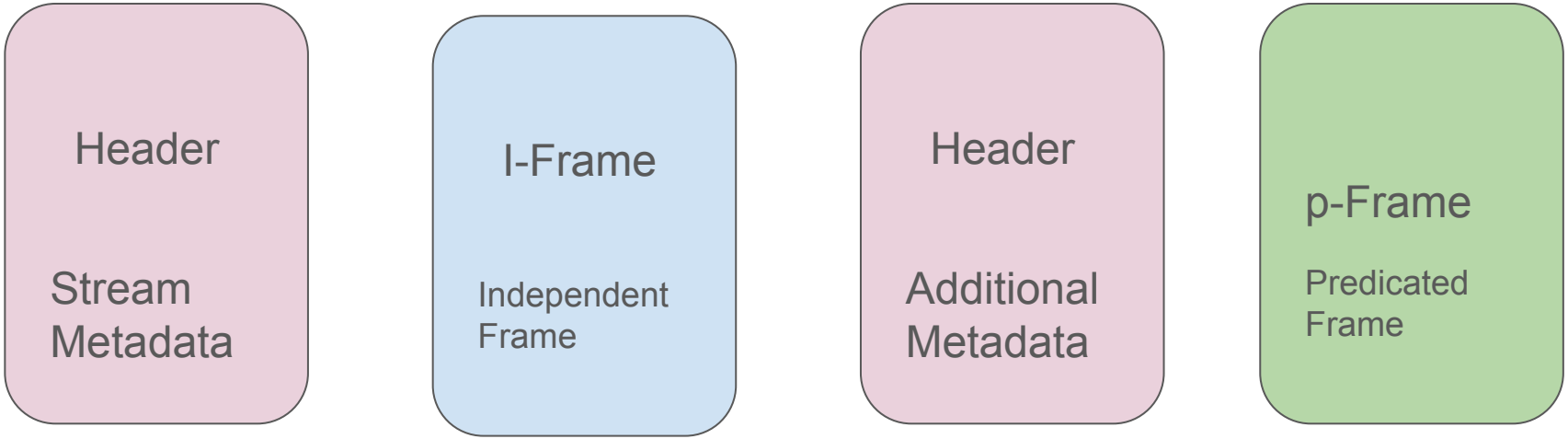
Data File (.dat)

- Raw payload data
- I-Frames, P-Frames, Headers
- Can be standard video formats
- Compatible with HLS/DASH/MPQ

Metadata File (.moq)

- JSON array of MOQT Object metadata
- Offsets into data file
- MOQ specific information
- Timing and priority data

Video Frame Organization



All stored sequentially in the data file, with precise offsets recorded in the metadata file

JSON Metadata Structure

```
[ {
"trackNamespace": ["a", "b%33c"], "trackName": "c",
"objectID": 0, "groupID": 123, "subgroupID": 0,
"forwardingPref": "Subgroup",
"objectStatus": 0, "maxCacheDuration": 3600000,
"receiveTime": 1729457464000,
"dataFile": "video.dat",
"dataOffset": 1024, "dataLength": 4096
} ]
```

Issue #1: File Name Encoding

Safe encoding for cross-platform compatibility

Namespace tuple: (Foo, b+r)

Track name: ex1

Encoded filename: Foo.b%2br-ex1

Encoding Rules:

1. Percent encode special characters outsize [a-zA-Z0-9]
2. Namespace tuples are separated by periods (.)
3. Track Name separated by dash (-)
4. Option group ID suffix
5. Shell safe, URL safe and cross platform compatible

Solution Benefits

Reusability : Data files can be standard video formats usable by existing systems

Efficient Access: Direct offset-based access to specific objects without parsing the entire file

Streaming Compatible: Can easily work with HLS, DASH and regular MP4 infrastructures

Open Issues

1. How should we encode the filenames
2. Should we include recording start time in the filename ?
3. Do we need to preserve extension header ordering ?