Catalog Specification for MoQ compliant streaming formats
draft-law-moq-catalog-00

Abstract

   This document defines an interoperable Catalog specification for
   streaming formats implementing the MoQ Base Protocol.

About This Document

   This note is to be removed before publishing as an RFC.

   Status information for this document may be found at
   https://datatracker.ietf.org/doc/draft-law-moq/.

   Discussion of this document takes place on the Media Over QUIC
   Working Group mailing list (mailto:moq@ietf.org), which is archived
   at https://mailarchive.ietf.org/arch/browse/moq/. Subscribe at
   https://www.ietf.org/mailman/listinfo/moq/.

   Source for this draft and an issue tracker can be found at
   https://github.com/suhasHere/moq-catalog.

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 14 September 2023.

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[1](#). Introduction

The MOQ Base Protocol [MOQTransport] defines a media transport protocol that utilizes the QUIC network protocol [[QUIC](#)] and WebTransport[WebTrans] to move objects between publishers, subscribers and intermediaries. Subscription IDs are used to identify available tracks. The mapping of media characteristics to objects, as well as relative prioritization of those objects, is defined by a separate MoQ Streaming Format specification. Multiple streaming formats can operate concurrently over MoQ base protocol. Each streaming format defines its own catalog definition. This document provides normative requirements for these catalog definitions to ensure their compatibility across networks implementing the MoQ Base Protocol.

[2](#). Conventions and Definitions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

[2.1](#). Terminology

* Catalog - a Track with a reserved Track ID within an emission or
      MoQSession that defines the availability of other Tracks.

   * Emission - a collection of Tracks under a common prioritization
      and orchestration domain.

   * MoQ Base Protocol (MBP) - a media transport protocol that utilizes
      the QUIC network protocol [QUIC] and WebTransport[WebTrans] to
      move objects between publishers, subscribers and intermediaries

   * MoQ Streaming Format - a specification which defines how to stream
      media over the MoQ Base Protocol. It includes a catalog
      definition, a mapping of media to the protocol objects,
      prioritization rules and additional business logic.

   * Track - a sequence of Objects within MBP

   * Track ID - a string concatenation of a globally unique provider
      identifier and a "Track Name".

3. Catalog

   A Catalog is a special case of a Track. A Track is composed of a
   succession of Objects, each assigned to a Group.

3.1. Catalog Track ID

   A Catalog MUST have a Track ID whose Track Name MUST be the lowercase
   string "catalog". Each Emission MUST have at most one track with
   Track Name of "catalog", which defines all other tracks within that
   emission. If a streaming format requires a series of multiple
   catalogs, then it MUST maintain a singleton parent "catalog" which is
   the entry point and definition of all other child catalogs within
   that emission.

   Catalog TrackID := <provider-domain>/<emission-id>/catalog

   Ex: streaming.com/emission123/catalog identifies the catalog
   track for the emission123

3.2. Catalog payload structure

   The payload of a Catalog Object consists of two components - a two
   octet header defining the type, followed by the variable length body.

```
      +---------------+--------------------+
      |  0x01 - 0x02  |  Type designator   |
      |  0x03 -       |       Body         |
      +---------------+--------------------+
```

   To understand the type of catalog object, a receiver would read the

first two octets of the object payload and interpret them as an
integer in the range 0x0000 - 0xFFFF. This would define the
Streaming Format of the catalog object, which in turn would define
the serialization of the body, allowing the receiver to parse the
body and extract the internal information.

A Catalog specification MUST define the binary serialization of the
body. This serialization may vary between streaming formats and
there is no requirement to standardize how the data within the body
is represented.

3.3. Catalog contents

A Catalog MUST describe the Track IDs available within an emission.
It MAY provide initialization data as well as selection criteria to
assist a client in selecting content for subscription.

3.4. Catalog dependency

The first Catalog object in any group sequence MUST be independent of
any other catalog object. Subsequent catalog objects within the same
group sequence MAY be dependent on the prior catalog objects within
the same group.

4. Security Considerations

The catalog payload type header MUST NOT be encrypted. The catalog
payload body MAY be encrypted.

5. IANA Considerations

This section details how the Type of the Catalog format that can be
registered. The type registry can be updated by incrementally
expanding the type space, i.e., by allocating and reserving new type
identifiers. As per [RFC8126], this section details the creation of
the "MoQ Base Protocol Catalog Type" registry.

5.1. Catalog Type Registry

This document creates a new registry, "MoQ Base Protocol Catalog
Type". The registry policy is "RFC Required". The Type value is 2
octets. The range is 0x0000-0xFFFF. The initial entry in the
registry is:

```
    +--------+------------+-------------------------------+
    | Type   |    Name    |              RFC              |
    +--------+------------+-------------------------------+
    | 0x0000 |  Reserved  |                               |
    +--------+------------+-------------------------------+
```

6. References

6.1. Normative References

[MoQTransport] Nandakumar, S "MOQTransport - Unified Media Delivery over QUIC" Work in progress

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, https://www.rfc-editor.org/info/rfc2119 (https://www.rfc-editor.org/info/rfc2119).

6.2. Informative references

[RFC8126] Cotton, M., Leiba, B., and T. Narten, "Guidelines for Writing an IANA Considerations Section in RFCs", BCP 26, RFC 8126, DOI 10.17487/RFC8126, June 2017, https://www.rfc-editor.org/info/rfc8126 (https://www.rfc-editor.org/info/rfc8126).

[QUIC] Iyengar, J., Ed. and M. Thomson, Ed., "QUIC: A UDP-Based Multiplexed and Secure Transport", RFC 9000, DOI 10.17487/RFC9000, May 2021, https://www.rfc-editor.org/rfc/rfc9000 (https://www.rfc-editor.org/rfc/rfc9000).

[WebTransport] Frindell, A., Kinnear, E., and V. Vasiliev, "WebTransport over HTTP/3", Work in Progress, Internet-Draft, draft-ietf-webtrans-http3-04, 24 January 2023, https://datatracker.ietf.org/doc/html/draft-ietf-webtrans-http3-04 (https://datatracker.ietf.org/doc/html/draft-ietf-webtrans-http3-04).

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