Conformance Test Specification for Marlin Adaptive Streaming Specification - Full Profile

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Final

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1 Introduction

This document describes Conformance Test Specification for Marlin Adaptive Streaming.

1.1 Document Organization

This document is organized as follows:

- (This) introduction, including abbreviations, definitions and references.
- Conformance Test Items for Full Mode
- Conformance Test Items for HTTP Live Streaming

1.2 Overview

This document describes Conformance Test Specification for client and service implementations of the Marlin Adaptive Streaming Specification [MAS]. The goal for this specification is to help ensure interoperability between independent implementations of clients and services supporting Marlin Adaptive Streaming Specification by testing functions specified in [MAS]. In other words, this Conformance Test Specification does not ensure 100% coverage of the specification. It is expected that the tests are expanded upon as implementers verify interoperability with each other.

1.3 Conformance Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this specification are to be interpreted as described in IETF RFC 2119 [RFC2119].

These capitalized key words are used to unambiguously specify requirements and behavior that affect the interoperability and security of implementations. When these key words are not capitalized they are meant in their natural-language sense.

All Elements of this specification are considered **Normative** unless specifically marked **Informative**. All Normative Elements are **Mandatory** to implement, except where such an element is specifically marked **OPTIONAL**. Finally, where **Normative** elements are described as **OPTIONAL**, they MAY be omitted from an implementation, but when implemented, they MUST be implemented as described.

1.4 References

1.4.1 Normative references

[8pus]	Octopus DRM Technology Platform Specifications, Version 1.0
[BBTS]	Marlin Broadband Transport Stream Specification, Version 1.1
[DASH]	ISO/IEC 23001-6, Information technology - MPEG systems technologies — Part 6: Dynamic adaptive streaming over HTTP (DASH)
[HLS]	IETF Internet Draft draft-pantos-http-live-streaming-05
[MAS]	Marlin Adaptive Streaming Specification - Simple Profile, Version 1.0
[MAF]	Marlin Adaptive Streaming Specification - Full Profile, Version 1.0

[MBB]	Marlin Broadband Delivery System Specification, Version1.2
[MCS]	Marlin – Core System Specification, Version 1.3
[MP4CENC]	ISO/IEC 23001-7 Information technology -- MPEG systems technologies -- Part 7: Common encryption in ISO base media file format files
[MS3]	Marlin – Simple Secure Streaming Specification, Version 1.0
[MURIT]	URI Templates for Marlin, Version 1.0
[OMADCF]	Open Mobile Alliance DRM Content Format Approved Version 2.1 – 14 Oct 2008 OMA-TS-DRM-DCF-V2_1-20081014-A
[OMArlin]	OMArlin Specification, Version 1.0
[RFC2119]	S. Bradner, Key words for use in RFCs to Indicate Requirement Levels, IETF RFC 2119, March 1997. http://www.ietf.org/rfc/rfc2119.txt.
[Schema]	XML Schema Part 1: Structures. W3C Recommendation. D. Beech, M. Maloney, N. Mendelsohn, H. Thompson. May 2001. http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/

1.4.2 Informative references

Marlin	http://www.marlin-community.com/

1.5 Terms and Definitions

Marlin Content ID	As defined in [8pus] §2.2, the ID that uniquely identifies a Marlin content object
Marlin Content Key	As defined in [MCS] §1.5, the symmetric key that encrypts the payload of the Marlin content.
Marlin License	As defined in [8pus] §2.2, the consolidated form of content governance objects that are used to protect the content and associate usage rules to the protected content.

2 Conformance Test Items for Full Mode

This section describes REQUIRED functions of Marlin BB DRM Client, MS3 Client, MPD packager, and content packager supporting Full Mode.

2.1 Media Presentation Description Mapping

The following SHALL be tested for Marlin BB DRM Client and MS3 Client supporting the Full Mode:

- From §2.2.1 of [MAS], when MPD includes the <ContentProtection> element with the @schemeIdUri attribute equal to urn:uuid:D1612C79-D9E1-4D3B-8919-7967F55F9375, a client MUST be capable of handling <MarlinContentIds> and <MarlinContentId> elements to get Marlin Content ID.
- From §2.2.1 of [MAS], when the <ContentProtection> element has child elements not defined in this version of specification, a client MUST be capable to ignore such elements.

The Conformance Test SHALL confirm the specification above for the client.

The following SHALL be tested for an MPD packager supporting the Full Mode:

- From §2.2.1 of [MAS], MPD MUST include the <ContentProtection> element with the @schemeIdUri attribute equal to urn:uuid:D1612C79-D9E1-4D3B-8919-7967F55F9375 with <MarlinContentIds> and <MarlinContentId> elements to indicate Marlin Content ID.
- From §2.2.1 of [MAS], MPD MAY include the <FormatVersion> element. When the MPD includes the <FormatVersion> element, it MUST have attributes @major equals to 1 and @minor equals to 0.

The Conformance Test SHALL confirm the specification above for the MPD packager.

2.1.1 With Marlin BB

The following SHALL be tested for Marlin BB DRM Client supporting the Full Mode:

- From §2.2.1.1 of [MAS], when the <MarlinBroadband> element includes the <SilentRightsUrl> element, Marlin BB DRM Client MUST be capable of handling the <SilentRightsUrl> element according to [OMArlin] §4.2.1.
- From §2.2.1.1 of [MAS], when the <MarlinBroadband> element includes the <PreviewRightsUrl> element, Marlin BB DRM Client MUST be capable of handling the <PreviewRightsUrl> element according to [OMArlin] §4.2.2.
- From §2.2.1.1 of [MAS], when the <MarlinBroadband> element includes the <RightsIssuerUrl> element, Marlin BB DRM Client MUST be capable of handling the <RightsIssuerUrl> element according to [OMADCF] §5.2.1.9.

The Conformance Test SHALL confirm the specification above for the client.

The following SHALL be tested for an MPD packager supporting the Full Mode for Marlin BB:

- From §2.2.1.1 of [MAS], when indicating the silent rights url, the MPD MUST include the <SilentRightsUrl> element in the <MarlinBroadband> element and set the value according to [OMArlin] §4.2.1.
- From §2.2.1.1 of [MAS], when indicating the preview rights url, the MPD MUST include the <PreviewRightsUrl> element in the <MarlinBroadband> element and set the value according to [OMArlin] §4.2.2.
- From §2.2.1.1 of [MAS], when indicating the rights issuer url, the MPD MUST include the <RightsIssuerUrl> element in the <MarlinBroadband> element and set the value according to [OMADCF] §5.2.1.9.

The Conformance Test SHALL confirm the specification above for the MPD packager.

2.1.2 With MS3

The following SHALL be tested for MS3 Client supporting the Full Mode:

- From §2.2.1.2 of [MAS], when the <URIsAreTemplated> element has True value, a client SHALL be capable to resolve the URIs referenced in the MPD using URI Template [MURIT].

The Conformance Test SHALL confirm the specification above for the client.

The following SHALL be tested for an MPD packager supporting the Full Mode for MS3:

- From §2.2.1.2 of [MAS], when URIs referenced in a MPD use URI Template [MURIT], the MPD MUST include the <URIsAreTemplated> element with True value.

The Conformance Test SHALL confirm the specification above for the MPD packager.

2.2 Media Format Mapping

2.2.1 Extensions to MP4 Common Encryption Format

The following SHALL be tested for Marlin BB DRM Client and MS3 Client supporting MP4 for the Full Mode:

- From §2.1 of [MAF], a client MUST support the Common Encryption scheme ([MP4CENC]) or IPMP for the media segments.
- From §2.3.1 of [MAS], a client supporting the Common Encryption scheme MUST support the implicit Content ID mapping mode to derive Marlin Content ID.
- From §2.3.2 of [MAS], a client supporting the Common Encryption scheme MUST support the explicit Content ID mapping mode to associate KIDs and Marlin Content IDs.

The Conformance Test SHALL confirm the specification above for the client.

The following SHALL be tested for a content packager supporting MP4 (ISO/IEC 14496-12) for the Full Mode:

- From §2.1 of [MAF], a content packager MUST use the Common Encryption scheme ([MP4CENC]) or IPMP for the media segments.
- From §2.3.1 of [MAS], when using the implicit mapping mode, the content packager MUST follow the Marlin Content ID derivation from KID.
- From §2.3.1 of [MAF], when using the explicit mapping mode, the content packager MUST include MarlinKidMappingTableBox(‘mkid’) as child of a Protection System Specific Header box (‘pssh’) or a Protection Scheme Information Box (‘sinf’) and set the value according to §2.3.2 of [MAS].
- From §2.3.3 of [MAF], when the scheme_type is set to ‘MCEC’, the box structure of the Protection Scheme Information Box SHALL conform to [MAF] Table 3.
- From §2.3.3 of [MAF], when the scheme_type is set to ‘MCEG’, the box structure of the Protection Scheme Information Box SHALL conform to [MAF] Table 4.

The Conformance Test SHALL confirm the specification above for the content packager.

2.2.2 MPEG-2 Transport

The following SHALL be tested for Marlin BB DRM Client and MS3 Client supporting MPEG-2 Transport (ISO/IEC 13818-2) for the Full Mode:

- From §2.1 of [MAS], a client MUST support the Marlin Broadband Transport Stream [BBTS] format for the media segments.

The Conformance Test SHALL confirm the specification above for the client.

The following SHALL be tested for a content packager supporting MPEG-2 Transport (ISO/IEC 13818-2) for the Full Mode:

- From §2.1 of [MAS], a content packager MUST use the Marlin Broadband Transport Stream [BBTS] format for the media segments.

The Conformance Test SHALL confirm the specification above for the content packager.

3 Conformance Test Items for HTTP Live Streaming

This section describes REQUIRED functions of Marlin BB DRM Client, MS3 Client, and Playlist packager supporting HTTP Live Streaming for Marlin.

The following SHALL be tested for Marlin BB DRM Client and MS3 Client supporting HTTP Live Streaming for Marlin:

- From §3.1 of [MAS], a client MUST support the Bulk Encryption with EXT-X-KEY parameters defined in §3.1.
- From §3.2 of [MAS], a client MUST support the Packet Encryption with EXT-X-KEY parameters defined in §3.2.

The Conformance Test SHALL confirm the specification above for the client.

The following SHALL be tested for a Playlist packager for Marlin:

- From §3.1 of [MAS], when using the Bulk Encryption, the Playlist MUST include EXT-X-KEY parameters according to §3.1.
- From §3.2 of [MAS], when using the Packet Encryption, the Playlist MUST include EXT-X-KEY parameters according to §3.2.

The Conformance Test SHALL confirm the specification above for the Playlist packager.

3.1 Usage with MS3

The following SHALL be tested for MS3 Client supporting HTTP Live Streaming for Marlin:

- From §3.3 of [MAS], when a URIS-ARE-TEMPLATED is added as EXT-X-KEY parameter, a client SHALL be capable to resolve the URIs referenced in the Playlist (and child playlist) using URI Template [MURIT].

The Conformance Test SHALL confirm the specification above for the client.

The following SHALL be tested for a Playlist packager for MS3:

- From §3.3 of [MAS], when URIs referenced in a Playlist (and child play list) use URI Template [MURIT], the Playlist MUST include a URIS-ARE-TEMPLATED as EXT-X-KEY parameter with TRUE value according to §3.3.

The Conformance Test SHALL confirm the specification above for the Playlist packager.

3.2 Usage with Marlin BB

The following SHALL be tested for Marlin BB DRM Client supporting HTTP Live Streaming for Marlin:

- From §3.4 of [MAS], when the SILENT-RIGHTS-URL is added as EXT-X-KEY parameter, a client MUST be capable of handling the Url according to [OMArlin] §4.2.1.

- From §3.4 of [MAS], when the PREVIEW-RIGHTS-URL is added as EXT-X-KEY parameter, a client MUST be capable of handling the Url according to [OMArlin] §4.2.2.
- From §3.4 of [MAS], when the RIGHTS-ISSUER-URL is added as EXT-X-KEY parameter, a client MUST be capable of handling the Url according to [OMADCF] §5.2.1.9.

The Conformance Test SHALL confirm the specification above for the client.

The following SHALL be tested for a Playlist packager for Marlin BB:

- From §3.4 of [MAS], when indicating the silent rights url, the Playlist MUST include the SILENT-RIGHTS-URL as EXT-X-KEY parameter according to §3.4.
- From §3.4 of [MAS], when indicating the preview rights url, the Playlist MUST include the PREVIEW-RIGHTS-URL as EXT-X-KEY parameter according to §3.4.
- From §3.4 of [MAS], when indicating the rights issuer url, the Playlist MUST include the RIGHTS-ISSUER-URL as EXT-X-KEY parameter according to §3.4.

The Conformance Test SHALL confirm the specification above for the Playlist packager.