



ATSC

ADVANCED TELEVISION
SYSTEMS COMMITTEE

A/344:2024 Candidate Standard Revision Change Log

S38-522r2
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Advanced Television Systems Committee
1300 I Street, N.W., Suite 400E
Washington, D.C. 20005
202-872-9160

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Revision History

CS Version	Date	CS Change Author	Description
S38-522r0	6 March 2024	S38-517	Deprecated error code for DRM and clarified which error codes should be used (Issue 253).
S38-522r1	22 July 2024	S38-537	Merged S38-537r2 – Various API Changes to the CS WD
		S38-541	Merged S38-541r0 – MMT AssetLink API into the CS WD
S38-522r2	25 July 2024	Various Issue Numbers	Added descriptions to this document reflecting the various changes made to the A/344 CS WD based on issues.

Table of Contents

1. SCOPE	4
1.1 Introduction and Background	4
1.2 Organization	4
2. DEPRECATE DRM ERROR CODES	4
2.1 Scope	4
2.2 Rationale for Changes	4
2.3 Compatibility Considerations	4
2.4 Change Description	4
3. VARIOUS API UPDATES (S38-537R2)	5
3.1 Scope	5
3.2 Rationale for Changes	5
3.3 Compatibility Considerations	5
3.4 Change Description	5
4. MMT ASSETLINK API (S38-541R0)	6
4.1 Scope	6
4.2 Rationale for Changes	6
4.3 Compatibility Considerations	6
4.4 Change Description	6

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1. SCOPE

This document describes the changes to the ATSC 3.0 A/344:2024 revision candidate standard working draft. This document provides a list of changes made to the A/344 standard throughout the 2024 year. The descriptions below describe the background of the changes to the revision being balloted. There are additional small editorial changes as well as other fixes that were made without need for background information since they were clearly incorrect, and the solutions were straightforward.

1.1 Introduction and Background

This document describes changes or updates to the ATSC 3.0 A/344:2024 Candidate Standard Revision Working Draft which will eventually be recommended for the TG3 Proposed Standard ballot. This document is intended to capture changes to the working draft such that reviewers can easily understand the changes. Each section identifies a single change including the scope, rationale, and backwards compatibility of the change. This change log was produced by combining the previous change logs to allow a complete set of changes to be described for the balloted revision.

1.2 Organization

This document is organized as follows:

- Section 1 – The scope, introduction, and background of this document
- Section 2 – Deprecate DRM Error Codes
- Section 3 – Various API Updates (S38-537r2)
- Section 4 – MMT AssetLink API (S38-541r0)

2. DEPRECATE DRM ERROR CODES

2.1 Scope

This change impacts the DRM Operation API in Section 9.14.2 and Table 8.5 JSON-RPC ATSC Error Codes.

2.2 Rationale for Changes

There was confusion regarding which error messages were appropriate for failure to process the DRM request because of a missing or unsupported DRM system code.

2.3 Compatibility Considerations

All tests and conformance suites should use "-14" instead of either "-29" or "-101". The change was made in response to issues raised by Resillion that the correct error code was not known.

2.4 Change Description

Error code "-29" has been deprecated in favor of "-14" which now indicates an error due to both unknown and unsupported DRM systems.

3. VARIOUS API UPDATES (S38-537R2)

3.1 Scope

This change provides an update to the Integrated Subscribe API and two new APIs to support MMT assets.

3.2 Rationale for Changes

The first change adds the ability to specify which signaling tables should be provided to the Broadcaster Application. A new parameter is added to the Integrated Subscribe API which lists the tables of interest that the Receiver should notify the BA when new or updated versions of those tables are received. The current version of the API only allows all tables or no signaling tables to be sent to the BA which entails a significant amount of processing effort on both the Receiver and BA sides when only a few of the signaling tables are useful to the BA.

The remaining API changes provide additional APIs to select the MMT asset currently being played by the RMP and to obtain a notification that the RMP is now processing a new asset. These APIs are specific to MMT and the functionality is not available with the current set of APIs that control media.

3.3 Compatibility Considerations

This amendment is backwards compatible since the changes are the addition of new APIs. (Existing) receiver implementations need not support the new APIs. And, when supported by a Receiver, existing Broadcaster Applications are expected to ignore items that they do not understand per the provisions of Section 9.1: *"The Broadcaster Application is expected to gracefully ignore unknown keys and unknown values for existing keys, including unknown enumeration values."*

Similarly, if the Broadcaster Application provides specific signaling tables in its subscription request, existing Receivers should ignore this unknown parameter.

3.4 Change Description

See S38-537r2 for details. The following are a summary of the instructions on the various sections impacted:

- Add a new normative reference to ISO/IEC 23008-1:2017€ regarding details of MMT.
- Add a signaling data list to the 9.3.1 Integrated Subscribe API so that tables can be called out when the BA subscribes to "signalingData".
- Add "DASH" to various text in Section 9.7.7 to clarify that the Media Track Selection API described in that section is applicable only to DASH.
- Add 9.7.9 Media Asset Selection API for MMT
- Add an error code to table 8.5 to support the Media Asset Selection API.
- Add 9.13.8 RMP Media Asset Change Notification API
- Add a row to the available notification list in Table 9.31 so support subscriptions to the RMP Media Asset Change Notification.

4. MMT ASSETLINK API (S38-541R0)

4.1 Scope

This change provides two new APIs supporting dynamic content insertion using MMT.

4.2 Rationale for Changes

A/344 currently describes APIs that support dynamic content insertion from the Broadcaster Application for XLinks which is strictly a DASH control feature. There is no such mechanism in the current A/344 to support content replacement controlled by the Broadcaster Application within an MMT service. The two sections provided in this change describe those APIs.

4.3 Compatibility Considerations

This amendment is backwards compatible since the changes are the addition of new APIs. (Existing) receiver implementations need not support the new APIs. And, when supported by a Receiver, existing Broadcaster Applications are expected to ignore items that they do not understand per the provisions of Section 9.1: *"The Broadcaster Application is expected to gracefully ignore unknown keys and unknown values for existing keys, including unknown enumeration values."*

4.4 Change Description

See S38-541r0 for details. The following are a summary of the instructions on the various sections impacted:

- Add a new normative reference to ISO/IEC 23008-1:2017€ regarding details of MMT.
- Add definitions for the terms MMT Asset and Asset, and MMT-Asset File.
- Add a new section 9.17 that describes the AssetLink APIs including an overview section and diagram and two new APIs:
 - AssetLink Resolution Notification API that is sent by the Receiver to indicate the presence of an available asset to be replaced, and
 - AssetLink Resolve API that is the response of the Broadcaster Application to the notification providing replacement content or other instructions.

5. ISSUES ADDRESSED

5.1 Scope

As part of the ongoing NextGen TV Logo test program and various "plugfests", Resillion and other companies are discovering issues with the APIs described by A/344. These often require clarification of the semantics or intent of the API which can be accomplished with minimal changes.

5.2 Rationale for Changes

The changes made to address various issues have been discussed at length by S38. S38 also attempts to minimize changes as much as possible to avoid introducing further complexity. The details of the discussion for each change are captured in the minutes from each of the S38 meetings and are not duplicated here.

5.3 Compatibility Considerations

In all S38 modifications to the A/344 standard, backward compatibility is a primary consideration. Each of the changes described below are clarifications and language fixes to provide better understanding of the intent of APIs and descriptions of Receiver and Broadcaster Application behavior.

5.4 Change Description

The following subsections are a brief summary of the changes made in response to issues.

5.4.1 Normative Language Changes

There was confusion over normative language around Receiver behavior. A/344 has maintained the construct of a "Receiver Reference Model" which was a theoretical receiver that could be specified with normative language without necessarily requiring actual implementations to conform. This has led to confusion since "Receiver" is used throughout the document and only at the beginning introduction is it described as shorthand for the "Receiver Reference Model". This has led to confusion during testing and implementation. To address this, normative "shall" statements defining Receiver behavior have been replaced by the phrase "is expected to" indicating that Broadcaster Application developers expect the Receiver to behave in a certain way and may not perform correctly if the Receiver is not implemented in that way. It is normally used to describe what is called "conditional mandatory" where *if* the receiver implements a particular behavior, then it *should* behave in a particular way. The "shall" statements describing semantic behavior or syntax remain since these describe a specific contract for an API.

5.4.2 Fixed link to response schema URI in the request schema section of Section 9.16 Prepare for Service Change API.

5.4.3 Added GSID definition to 9.13.5 to resolve issue 257 that pointed out that "GSID" was never defined, and it was not clear what the semantic behavior would be by selecting it because it was an undefined acronym.

5.4.4 Added clarification text to Section 6.3 to resolve issue 258. In this case, it was not clear that two notifications were to be sent when the service changed, and the Broadcaster Application was still running. It was clear from the text that the first notification that the service was being changed should be sent but not that a notification should be sent *after* the change had taken place.

5.4.5 Added text to describe what is returned if a Receiver cannot find service guide content matching the requested content ID. In this case, it was unclear what would happen if the Broadcaster Application asked for content using a content ID that was not present in the ESG data.

5.4.6 Updated all schema links to point to working repository of <https://www.atsc-schemas.org/atsc3.0/a344/working/20240722>. A login is required to access the working site until the document and schemas pass TG3 candidate standard ballot. The username and password are provided as a footnote when the URL is first provided in Section 9.

— End of Document —