



**ATSC**

ADVANCED TELEVISION  
SYSTEMS COMMITTEE

## **A/344:2021 Revision Change Log**

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S38-354r0  
24 November 2021

**Advanced Television Systems Committee**  
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Washington, D.C. 20006  
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The Advanced Television Systems Committee, Inc., is an international, non-profit organization developing voluntary standards and recommended practices for digital television. ATSC member organizations represent the broadcast, broadcast equipment, motion picture, consumer electronics, computer, cable, satellite, and semiconductor industries. ATSC also develops digital television implementation strategies and supports educational activities on ATSC standards. ATSC was formed in 1983 by the member organizations of the Joint Committee on Inter-society Coordination (JCIC): the Electronic Industries Association (EIA), the Institute of Electrical and Electronic Engineers (IEEE), the National Association of Broadcasters (NAB), the National Cable Telecommunications Association (NCTA), and the Society of Motion Picture and Television Engineers (SMPTE). For more information visit [www.atsc.org](http://www.atsc.org).

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*Note:* The user's attention is called to the possibility that compliance with the standard affected by these changes may require use of an invention covered by patent rights. By publication of the corresponding standard, no position is taken with respect to the validity of this claim or of any patent rights in connection therewith. One or more patent holders have, however, filed a statement regarding the terms on which such patent holder(s) may be willing to grant a license under these rights to individuals or entities desiring to obtain such a license. Details may be obtained from the ATSC Secretary and the patent holder.

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Implementers with feedback, comments, or potential bug reports relating to this document may contact ATSC at <https://www.atsc.org/feedback/>.

### Revision History

Version	Date
Changes introduced by S38-348r1 Binary Event Data Support	24 Nov 2021

## Table of Contents

<b>1. SCOPE .....</b>	<b>4</b>
<b>1.1 Introduction and Background</b>	<b>4</b>
<b>2. S38-348R1: "BINARY EVENT DATA SUPPORT" .....</b>	<b>4</b>
<b>2.1 Scope</b>	<b>4</b>
<b>2.2 Rationale for Changes</b>	<b>4</b>
<b>2.3 Compatibility Considerations</b>	<b>5</b>
<b>2.4 Schema Changes</b>	<b>5</b>

## A/344:2021 Revision Change Log

### 1. SCOPE

This document describes one or more changes to the ATSC 3.0 Interactive Content candidate standard. These changes have been accepted by the S38 Specialist Group on Interactive Content but are pending full TG3 and membership approval. Readers are cautioned that these changes may be amended in the future but are encouraged to provide feedback and comments.

#### 1.1 Introduction and Background

This document describes changes or updates to the ATSC 3.0 Interactive Content Candidate Standard. Each section identifies a single change including the scope, rationale, and backwards compatibility of the change. The amendment from which these changes were made is referenced by the S38 document number and that document number is used as the author when making changes to the working draft. This change log may also include change instructions for schemas since these cannot be easily tracked through red-line processes.

The A/344 standard maintains a “revision log” of its included APIs from revision to revision by listing the changes in Table 9.1. In addition, each revision includes an Annex which captures the API from the previous edition in unchanged form. By maintaining the previous API definition in the document, implementers may look at the history of each API.

### 2. S38-348R1: "BINARY EVENT DATA SUPPORT"

#### 2.1 Scope

This document proposes the addition a `contentEncoding` property to the JSON schema for the Event Stream Event API response message in A/344:2021 that identifies the presence of encoded binary event data pursuant to New Project Proposal (NPP), N-031r1 (S38-342r3).

#### 2.2 Rationale for Changes

Several problems have been identified with the Event Stream Event API that relate to the use of stream events to deliver binary data from the broadcaster to a Broadcaster Application.

When stream events are delivered as MPD Events per A/337:2019, the event data is conveyed in the MPD in UTF-8 format and can be accompanied by a parameter that identifies that a content encoding has been applied. The DASH specification currently supports either the declaration of no encoding or of IETF RFC 4648 and directs DASH clients to apply the identified encoding before delivering the event data to an application. Since JSON supports only Unicode data, receiver implementations using the present A/344 specification cannot convey such decoded data and are therefore unable to conform to this DASH requirement. Further, if such a receiver conveys the undecoded data to a Broadcaster Application, there is no means specified for the BA to be informed that the event data requires decoding.

When stream events are delivered to the receiver in a transport that conveys event data in a binary format, as is the case for the 'emsg' box, 'evt i' box, and Dynamic Event Message formats specified in A/337:2019, no method is currently specified for how binary data that does not conform with the Unicode limitation of JSON and therefore cannot be delivered natively in the API response, is to be handled by the receiver. To be clear, if a broadcaster emits binary event data in one of these formats that does not conform to UTF-8, A/344:2021 provides no mechanism for the receiver to deliver that event data deliver to the application. As a result, broadcasters are limited

under the current specification to send only Unicode-compliant event data through these transports, even though they natively support binary data. This limitation may be acceptable for some use cases since the broadcaster can apply application-level encoding/decoding of binary data, but for other use cases it may be problematic, e.g., carriage of binary SCTE-35 messages intended for consumption by both ATSC 3 applications and non-ATSC 3 devices.

Each of these problems can be resolved by introducing an optional `contentEncoding` property to the receiver response to the Event Stream Event API which is used in the same way as the corresponding property in DASH. For MPD Events, the receiver populates this property with the `Event@contentEncoding` parameter from the MPD and passes the event data undecoded. For non-Unicode-conforming event data transported to the receiver in a binary format, the receiver adopts the DASH model, applying base64 encoding to the binary event data prior to delivering it to the BA with base64 encoding applied and declares this encoding in the `contentEncoding` parameter.

### 2.3 Compatibility Considerations

The proposed change is believed to be backwards compatible. There is no change to the specification of service protocols, so receivers' compatibility with services is unaffected.

For legacy Broadcast Applications, if the service uses only UTF-8-compatible event data, receiver behavior is unmodified under the proposed change.

For services that employ non-UTF-8-compatible event data via MPD Event, the data will be presented to the BA in the same base64 format by receivers operating with or without the proposed specification change. The only difference in this case will be that receivers made after the specification change will include an additional parameter in the response declaring the presence of content encoding.

For services that employ non-UTF-8-compatible event data via 'emsg' box, 'evt-i' box, or Dynamic Event Message, BAs running on receivers that adopt the proposed change will receive this event data in encoded format which they otherwise would not have received at all. A receiver providing this additional data is not believed to present any practical problem and, if it does, the BA can be modified to correct it.

### 2.4 Schema Changes

*Change schema file `org.atsc.eventStream.event-notification-20210127.json` as follows:*

- 1. Change the file name date to 20210922.*
- 2. Update the JSON schema file to include the new `contentEncoding` parameter found in Table 9.53 and define the type of the "data" field to be "string".*
- 3. Update the example JSON message file to be consistent with the new schema.*

Document changes are captured as redlined text under author 'S38-348r1' in A/344 CS WD revision S38-344r1.

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