Amendment No. 2 to ATSC Standard A/336:2018, "Addition of Media Type Definitions"

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Revision History

Version	Date
Amendment approved	27 August 2018

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1. OVERVIEW

1.1 Definition

An Amendment is generated to document an enhancement, an addition or a deletion of functionality to previously agreed technical provisions in an existing ATSC document. Amendments shall be published as attachments to the original ATSC document. Distribution by ATSC of existing documents shall include any approved Amendments.

1.2 Scope

This document describes updates to A/336:2018 to provide Media Type definitions, including supporting information such as new references and clarified text. Additional clarifications to timeline references are also described. It also includes references to the ATSC Code Point Registry, one editorial change to the acronym section, and a clarification regarding the definition of globalServiceID.

1.3 Rationale for Changes

The primary reason for the changes described in this document being proposed is because Media Type definitions for Recovery Files and for Dynamic Event Messages, which are required for IANA registration of the Media Type and usage in a multipart MIME as required by A/331, are not present in A/336. These must be added in order for receivers to unambiguously identify Recovery Files and Dynamic Event Messages. This involves the addition of an Annex defining the Media Types, references to the RFCs used in the Media Type definitions, and clarifications to the specification text. The JSON profile for the RDT Media Type has been selected to maximize interoperability between recovery data providers and devices, and to increase confidence that devices will be able to process the recovery data with predictable results.

Clarifications are also provided regarding applicability of the A/360 security policies to recovery data.

References to the ATSC Code Point Registry are added to the text to allow extensibility of enumerated values, where applicable. Changes to call out ATSC Reserved values are also noted.

Additional changes are proposed to clarify the timelines on which time parameters are valid. These changes include the definition of a new term, Recovery Media Timeline.

The acronym edit is to correct the definition of EIDR.

Finally, a clarification on the source of the definition of the globalServiceID value is provided.

1.4 Compatibility Considerations

The changes described in this document are backward-compatible relative to the currently published version of the standard to which this Amendment pertains and any previously approved Amendments for that standard. The changes described herein provide additional information or clarifications to existing text, and as such are unlikely to affect the behavior of any existing implementations.

2. LIST OF CHANGES

Change instructions are given below in *italics*. Unless otherwise noted, inserted text, tables, and drawings are shown in blue; deletions of existing text are shown in ~~red strikeout~~. The text "[ref]" indicates that a cross reference to a cited referenced document should be inserted.

2.1 Normative References

Add new reference:

[xx] IETF: "The JavaScript Object Notation (JSON) Data Interchange Format," RFC 8259, Internet Engineering Task Force, December 2017. https://tools.ietf.org/html/rfc8259

2.2 Informative References

Add new references:

[yy] IETF: "Media Type Specifications and Registration Procedures," RFC 6838 (BCP 13), Internet Engineering Task Force, January 2013. https://tools.ietf.org/html/rfc6838

[zz] ATSC: "Code Point Registry", Advanced Television Systems Committee, Washington, D.C., https://www.atsc.org/techdoc/code-point-registry/

2.3 Acronyms and Abbreviations

EIDR – Entertainment ~~Industry Data~~ Identifier Registry

2.4 Terms

Add new term:

Recovery Media Timeline – A linear frame of reference established using automatic content recognition (ACR) that associates positional time values to content in a media presentation. For ROUTE/DASH services, this corresponds to the DASH media presentation timeline. For MMT services, this corresponds to the MMT presentation timeline.

2.5 Change Instructions

In Section 1.2*, add reference to the new annex.*

- Annex E – Media Type Registrations

In Section 3.2.1, *add boilerplate text referencing the ATSC Code Point Registry as the final paragraph in the section.*

ATSC Reserved indicates that only ATSC has currently defined values. Industry Reserved indicates that other SDOs have defined values and users are advised to consult the ATSC Code Point Registry [zz].

In Section 5.1.1, *reference the ATSC Code Point Registry for wm_message_id definitions.*

wm_message_id – This 8-bit value shall uniquely identify the syntax and semantics of the data bytes carried in the message block, coded according to Table 5.3 below. As indicated in the table, the encodings of the watermark message types defined in the present standard may be found in Sections 5.1.4 through 5.1.11. Note that additional watermark message types might exist as indicated in the ATSC Code Point Registry [zz].

Table 5.3 wm_message_id Encoding

wm_message_id Value	Max Fragments	Message	Reference
0x00	4	ATSC R~~r~~eserved	
0x01		content_id_message()	Sec. 5.1.4
0x02		presentation_time_message()	Sec. 5.1.5
0x03		uri_message()	Sec. 5.1.6
0x04		vp1_ message()	Sec. 5.1.7
0x05		dynamic_event_message()	Sec. 5.1.8
0x06		display_override_message()	Sec. 5.1.9
0x07-0x7E		~~reserved~~ Industry Reserved. See ATSC Code Point Registry [zz].	ATSC Code Point Registry [zz].
0x7F		user_private_message()	Sec. 5.1.11
0x80	256	AEA_message()	Sec. 5.1.10
0x81-0xFE		~~reserved~~ Industry Reserved. See ATSC Code Point Registry [zz].	ATSC Code Point Registry [zz].
0xFF		user_private_message()	Sec. 5.1.11

In Section 5.1.4, *reference the ATSC Code Point Registry for content_ID_type definitions and clarify the reference time frame for the time values.*

content_ID_type – This 5-bit unsigned integer field shall identify the type of content identifier provided in the message coded according to Table 5.6 below. Note that additional Content ID types might exist as indicated in the ATSC Code Point Registry [zz].

Table 5.6 content_ID_type Field Encoding

content_ID_type Value	Meaning
0x00	ATSC Reserved
0x01	EIDR
0x02	Ad-ID
0x03–0x3E	~~Reserved for ATSC use~~Industry Reserved. See ATSC Code Point Registry [zz].
0x3F	User Private Message. See private_ID_value below.

...

valid_until_time – This 32-bit unsigned integer shall indicate the end of the validity interval of the Content ID on the Recovery Media Timeline, encoded as the least-significant 32 bits of the count of the number of seconds since January 1, 1970 00:00:00, International Atomic Time (TAI).

valid_until_time_ms – This 10-bit unsigned integer in the range 0 to 999 shall indicate the milliseconds offset from the time indicated in valid_until_time, such that the formula valid_until_time

+ (valid_until_time_ms/1000) yields the validity interval end time of the Ceontent ID to the nearest 1 millisecond.

In Section 5.1.5, *clarify the reference time frame.*

A Presentation Time Message shall be carried within a single watermark payload. (I.e., the value of last_fragment shall be 0 for a message block carrying a Presentation Time Message.) The Presentation Time Message provides an indication to the receiver of the presentation time of the video frame carrying the watermark on the Recovery Media Timeline. If a given instance of the presentation_time_message() is repeated in immediate succession, the indicated presentation time shall correspond with the video frame of the first occurrence. The syntax and bitstream semantics of the presentation_time_message() shall be as given in Table 5.7 and the parameter descriptions that follow.

...

presentation_time – This 32-bit unsigned integer shall indicate the presentation time of the frame associated with the watermark on the Recovery Media Timeline, encoded as the least-significant 32 bits of the count of the number of seconds since January 1, 1970 00:00:00, International Atomic Time (TAI).

In Section 5.1.6, *reference the ATSC Code Point Registry for additional uri_type definitions. Change text in Table 5.10 to align with other specifications.*

uri_type – An 8-bit unsigned integer field that shall identify the type of URI to follow, according to the encoding given in Table 5.9. Note that additional encodings might exist as indicated in the ATSC Code Point Registry [zz].

Table 5.9 uri_type field Encoding

uri_type	Meaning
0x00	ATSC Reserved
0x01	URL of Signaling Server (providing access to the Service Layer Signaling (SLS), as specified in Section 7 of A/331 [ref]). Refer to A/331 [ref] Section 6.7 for use.
0x02	URL of ESG data server (providing access to the ESG data, as specified in A/332 [ref]). Refer to A/332 [ref] Section 5.5.2 for use.
0x03	URL of Service Usage Data Gathering Report server (for use in reporting service usage, as specified in A/333 [ref]). Refer to A/333 [ref] Section 4.2.3 for use.
0x04	URL of dynamic event WebSocket server (providing access to dynamic events via WebSocket protocol, as specified in A/337 [ref]). Refer to A/337 Section 5.5 for use.
0x05	URL of Advanced Emergency Alert Table (AEAT) associated with this Service. The XML syntax of the AEAT is defined in Section 6.5 of A/331 [ref]. Refer to Section 5.4.5. below for use.
0x06-0xFF	~~Reserved~~ Industry Reserved. See ATSC Code Point Registry [zz].

domain_code – This 8-bit unsigned integer shall indicate the identifier code that shall identify the domain to be used for URL construction, according to Table 5.10.

Table 5.10 domain_code Encoding

domain_code value	domain_string()
0x00	`vp1.tv`
0x01 – 0xFF	ATSC Reserved

In Section 5.1.7, *clarify the timeline for the time-based parameters.*

A VP1 Video Watermark Segment shall consist of video content carrying a series of successive VP1 Message Groups whose initial video frames are nominally at 1.5 second intervals such that if the initial video frame of the first VP1 Message Group in a VP1 Video Watermark Segment occurs at time *T* seconds in the presentation, the initial video frame of the *n*th successive VP1 Message Group in the VP1 Video Watermark Segment occurs within ±~~+/-~~0.5 video frames of time *T*+1.5*n* seconds. All VP1 Message Groups in a VP1 Video Watermark Segment shall have the same Server Code and successive VP1 Message Groups in a VP1 Video Watermark Segment shall have sequentially incrementing Interval Codes. The query_flag value in the VP1 payload may change between successive VP1 Message Groups in a VP1 Video Watermark Segment.

When the vp1_message() is carried in a video component of audiovisual content for which an audio component employs an audio watermark carrying the same VP1 Payload, the VP1 Message Groups of the video watermark shall be time-aligned in the presentation such that the initial video frame in every VP1 Message Group occurs within ±~~+/-~~0.5 video frames of the corresponding starting Cell boundary in the VP1 audio watermark ~~on the presentation timeline~~.

...

Figure 5.2 illustrates the temporal structure of VP1 Message Groups carrying a VP1 Message in a VP1 Video Watermark Segment, with time alignment in the presentation to a VP1 Audio Watermark Segment. The yellow-shaded VP1 Message Group carries the same watermark information as does the yellow-shaded VP1 cell() in the audio signal. Note that the VP1 Message Group spacing is exactly 1.5 seconds and the audio signal VP1 cell() is offset from the initial video frame of each VP1 Message Group by ¼ of a video frame period.

In Section 5.1.8, *clarify the timeline for the time-based parameters and reference the ATSC Code Point Registry for delivery_protocol_type definitions.*

delivery_protocol_type – This 4-bit field shall signify the delivery protocol (e.g., MMT or ROUTE/DASH) of the service to which the Dynamic Event applies. ~~The~~ Table 5.13 below describes the encoding of this field. Note that additional encodings might exist as indicated in the ATSC Code Point Registry [zz].

Table 5.13 delivery_protocol_type field Encoding

delivery_protocol_type	Meaning
0	ATSC Reserved
1	ROUTE/DASH
2	MMTP
3-15	~~Reserved for future use~~Industry Reserved. See ATSC Code Point Registry [zz].

...

presentation_time – This 32-bit unsigned integer shall indicate the presentation time of the Event on the Recovery Media Timeline, encoded as the least-significant 32 bits of the count of the number of seconds since January 1, 1970 00:00:00, International Atomic Time (TAI).

***In Section 5.1.10**, indicate that reserved values are "ATSC Reserved" and clarify the timeline for the time-based parameters.*

Table 5.16 Code Values for `AEA_type` Field

Code Value	AEA_type	Meaning
0x00	undefined	
0x01	Alert	Indicates that AEA message is new. (Note: alert messages such as the U.S. required monthly test, RMT, are considered alert messages, and AEA_type must be set to the value of 0x01).
0x02	Update	Indicates that AEA message is not new, but contains updated information from any previous emergency alert message.
0x03	Cancel	Indicates that AEA message is cancelling any previous emergency alert message, even when the message is not expired.
0x04-0x07	other values	ATSC Reserved for future use

...

Table 5.17 Code Values for `audience` Field

Code Value	Audience	Meaning
0x00	Undefined	
0x01	Public	For general dissemination to unrestricted audiences. All alerts intended for public consumption must have the value of “public.” (Required for AEA public dissemination)
0x02	Restricted	For dissemination only to an audience with a defined operational requirement. Alerts intended for non-public dissemination may include the value of “restricted”.
0x03	Private	For dissemination only to specified addresses (conditional access requirement).
0x04-0x07	other values	ATSC Reserved for future use

...

`effective` – This parameter shall indicate the effective date and time of AEA Message on the wall-clock timeline, encoded as a 32-bit count of the number of seconds since January 1, 1970 00:00:00, International Atomic Time (TAI). This parameter shall be the value of the AEAT.AEA.Header@effective attribute of the current Advanced Emergency Alert message defined in [ref].

`expires` – This parameter shall indicate the latest expiration date and time of AEA Message on the wall-clock timeline, encoded as a 32-bit count of the number of seconds since January 1, 1970 00:00:00, International Atomic Time (TAI). This parameter shall be the value of the AEAT.AEA.Header@expires attribute of the current Advanced Emergency Alert message defined in [ref].

`domain_code` – This 8-bit unsigned integer shall indicate the string that shall identify the domain to be used for URL construction, according to Table 5.18.

Table 5.18 domain_code Encoding

domain_code value	domain_string()
0x00	`vp1.tv`
0x01 – 0xFF	ATSC Reserved

***In Section 5.4**, clarify the references to other specifications concerning security in the final paragraph as follows.*

The use of the DNS~~, HTTPS and WebSocket~~ protocol~~s~~ in connection with the recovery process shall conform to the requirements of A/360 [7]. HTTPS and WebSocket protocols shall employ Secure Connections as specified in A/360 [7].

In Section 5.4.1*, clarify the timeline and correct references to internal sections by changing the paragraph that starts with "The response to a recovery data request shall contain..." and add references to other specifications concerning security as follows.*

The response to a recovery data request shall contain a Recovery File as set forth in Section [ref Section 5.4.3~~5.4.2~~] packaged together with zero or more other signaling files delivered in the same response body format ~~as~~ defined for svcInetUrl HTTP requests in Section 6.7~~6~~ of A/331 [ref]. Recovery Files need not be signed. The "validFrom", "validUntil", and "availAt" attributes, if present, correspond to UTC times on the Recovery Media Timeline. Receivers are not expected to use or cache signaling files that are not valid (i.e., if validFrom is in the future or validUntil is in the past compared to the current playback position on the Recovery Media Timeline) at the time of their receipt~~.If any signaling files are present, the metadata envelope shall include a "valid from" and a "valid until" and a "next URL" attribute associated with each signaling file. The "valid from" and "valid until" attributes define the interval of validity of the signaling file, and the "next URL" attribute is the URL of the next scheduled version of that signaling file.~~ Note that future versions of this standard might define a query string (see RFC 3986 [ref]).

In Section 5.4.3, *clarify that the recovery table format must be in JSON, and add a reference to Annex E.*

The Recovery File shall be a JSON document [xx]. RDT instance documents shall use UTF-8 encoding. The normative JSON schema for Recovery File format shall be as specified in Annex B. Broadband delivery of Recovery Files shall employ the media type definition specified in Annex E.1. Informative Table 5.28 describes the structure of the Recovery File format in a more illustrative way. The specification following the table gives the normative semantics.

In Section 5.4.3, Table 5.28, *clarify the wording about the querySpread value in the recovery data and align the definition of globalServiceID with A/344.*

querySpread	0..1	integer	Time window duration in milliseconds over which a device should randomly choose a time for querying Dynamic Event Server when signaled by the query_flag in the VP1 payload.

...

globalServiceID	1	string	A globally unique URI that identifies the ~~ATSC 3.0 s~~currently-selected service.

In Section 5.4.3, following Table 5.28, *clarify the wording about the query flag value in the recovery data, as well as the timeline referenced by the recovery data and align the wording of globalServiceID with A/344.*

queryFlag – When present, this element shall have the same value as the Query Flag ~~embedded~~ in~~to~~ the VP1 payload used to form the query request that resulted in this recovery data table~~that~~

~~carried the intervalCode and serverCode in the query request to which this recovery data table was provided as a response~~.

...

`contentID.validFrom` – A field that provides information about the UTC time from which ~~when~~ the contentId is valid ~~from~~on the Recovery Media Timeline.

`contentID.validUntil` – A field that provides information about the UTC time at which~~up to when~~ the contentId ~~is~~ will no longer be valid ~~until~~on the Recovery Media Timeline.

...

`globalServiceID` – A globally unique URI that shall indicate the globally unique Service ID associated with the currently-selected service; for an ATSC 3.0 service this shall have the meaning given for SLT.Service@globalServiceID in A/331 [ref] Section 6.3~~identify the ATSC 3.0 service. This element shall have the meaning specified in A/332 [2]~~.

In Section 5.4.3, Table 5.29*, clarify the timeline for the presentation time.*

`componentAnchor`	1		The mapping between the first VP1 payload in this VP1 Watermark Segment and its presentation time on the Recovery Media Timeline as defined in Table 5.30.

In Section 5.4.3, Table 5.30*, clarify the time reference.*

`presentationTime`	1	integer	Presentation time in seconds corresponding to `IntervalCodeAnchor`, encoded as the least-significant 32 bits of the count of the number of seconds since January 1, 1970 00:00:00, International Atomic Time (TAI).

In Section 5.4.3, following Table 5.30*, clarify the timeline for the time-based parameters.*

`presentationTime` – The ~~wall-clock~~ presentation time on the Recovery Media Timeline of the first frame of the first VP1 Message Group in the VP1 video Watermark Segment, or, for audio components, the ~~wall-clock~~ presentation time on the Recovery Media Timeline of the first sample of the first symbol in the first Cell of the VP1 Audio Watermark Segment, ~~in the form of~~ encoded as a 32-bit count of the number of seconds since January 1, 1970 00:00:00, International Atomic Time (TAI).

...

`systemTime` – Further information related to `presentationTime`, based on the `systemTime` element specified in A/331 [ref]. However, the `leap59` and `leap61` name/value pairs of `systemTime` shall indicate the presence of a leap second at the next leap second opportunity which follows `presentationTime` (i.e., in the last minute of the first subsequent UTC day of June 30 or December 31). The `systemTime` object ~~may~~ is expected to be used by receivers to perform the ~~conversion between TAI and~~ computation related to UTC times in the recovered signaling.

In Section 5.4.3, following Table 5.30*, remove unnecessary paragraphs. The first is removed entirely, the second is reworded and moved to the following section (see insertion in first change for Section 5.4.4).*

~~When the validUntil time of the last Content ID entry in the Content ID List approaches, the device can retrieve a new Recovery File to get an updated list.~~

~~If there is an unscheduled change to the Content ID List, or if there is a change to the Other Component list, the Query Flag in the VP1 watermark shall change state to indicate the availability of an Event to announce that a new Recovery File is available with the new information, as described in Section 5.4.4 below.~~

In Section 5.4.4 *(Dynamic Event Retrieval via Broadband), add an updated RDT to the first paragraph as a reason for a query flag transition.*

Availability of a Dynamic Event is indicated by a change in the query_flag value between successive VP1 payloads within a VP1 Audio Watermark Segment or between subsequent VP1 Message Groups in a VP1 Video Watermark Segment. A change in the query_flag value can also indicate the availability of an updated Recovery File, which can occur due to an unscheduled change to the Content ID List or a change to the Other Component list.

In Section 5.4.4 *(Dynamic Event Retrieval via Broadband), change the text as follows to reference the section in this document instead of A/331 in order to consolidate clarifying wording regarding the use of the delivery mechanism. Additionally, clarify the delivery mechanism for direct delivery of Dynamic Event Messages and reference Annex E.*

The format of the Dynamic Event shall be as defined in Table 5.12 of this document, and may be delivered directly in the response or may alternatively be packaged together with zero or more other signaling files delivered as defined in Section ~~6.7 of A/331 [1]. If any signaling files are present, the metadata envelope shall include a "valid from" and a "valid until" and a "next URL" attribute associated with each signaling file. The "valid from" and "valid until" attributes define the interval of validity of the signaling file, and the "next URL" attribute is the URL of the next scheduled version of that signaling file.~~ [ref Section 5.4.1] of this document. Broadband delivery of Dynamic Event Messages shall employ the media type definition specified in Annex E.2. Dynamic Events need not be signed.

In Annex C*, clarify the timeline for the time-based attributes.*

- Each signaling file has a validFrom, ~~and~~ a validUntil, and a nextURL attribute associated with it. The validFrom and validUntil fields define the interval of validity of the signaling file on the Recovery Media Timeline, and the nextURL is the URL of the next scheduled version of that signaling file. Thus, the device can get scheduled updates to the signaling files as needed.

...

If ~~at any time no~~ all Content ID Messages and VP1 watermarks disappear~~s~~, or a Content ID Message watermark or VP1 watermark appears ~~with~~indicating a new combination of BSID and channel number, or ~~there is~~ a discontinuity is detected in the Recovery M~~m~~edia T~~t~~imeline, then the ~~device will terminate~~receiver is expected to suspend presentation of any supplementary content, and start the signaling acquisition over again.

In Annex D*, clarify the timeline for the time-based attributes and correct section references.*

- The device receives in response a Recovery File (format defined in Section 5.4.~~2~~3) that includes ~~the original presentation time of~~a mapping of the Recovery Media Timeline to the

position in content ~~at~~of the start of the VP1 payload, information about the service being viewed, and a URL that can be used to retrieve the set of signaling files needed to access and present the supplementary content. These signaling files will be current as of the ~~presentation time~~position in the content of the VP1 payload.

...

- The Query Flag in the VP1 payload is used to signal the availability of an event. When a change of value of the Query Flag is detected, the device can request the event, using information from the VP1 payload (defined in Section 5.4.~~2~~4).

...

- The Recovery File, Dynamic Event, and signaling files are delivered as a multi-part MIME message encapsulated in an MBMS "metadata envelope" (defined in Section 6.7 of A/331 [ref]) that includes a "valid from" and a "valid until" and a "next URL" attribute associated with each signaling file. The "valid from" and "valid until" attributes define the interval of validity of the signaling file, and the "next URL" attribute is the URL of the next scheduled version of that signaling file. Thus, the device can get scheduled updates to the signaling files as needed.

...

- In the case of a ROUTE/DASH-based service, the ~~original presentation time in the Recovery File of the content at the start of the watermark~~Recovery Media Timeline will ~~be relative~~correspond to the media presentation timeline of the current MPD for the service. In the case of an MMT-based service, the ~~original presentation time in the Recovery File of the content at the start of the watermark~~Recovery Media Timeline will ~~be NPT~~correspond to the MMT presentation timeline.

***Prior to the "End of Document" text in Annex D**, add the following new Annex.*

Annex E: : Media Type Registrations

This Annex documents new media types registered by IANA at https://www.iana.org/assignments/media-types/media-types.xhtml#application.

Notice to editors: any changes to this Annex are subject to review by IETF and IANA as described in IETF BCP 13 [yy].

E.1 RDT

Type name:

application

Subtype name:

atsc-rdt+json

Required parameters:

N/A

Optional parameters:

N/A

Encoding considerations:

binary

Constrained to UTF-8.

See RFC 8259 [xx], Section 8.1.

Security considerations:

This media type inherits the issues common to all JSON media types - see RFC 8259 [xx], Section 12.

This media format is used to describe broadcast and broadband services. This format is highly susceptible to manipulation or spoofing for attacks desiring to mislead a receiver about a URL for signaling, reporting, or other services. Both integrity protection and source authentication are recommended to prevent misleading of processors. This type does not employ executable content, but since it is explicitly extensible then executable content could appear in an extension.

This media type does not provide any confidentiality protection and instead relies on the transport protocol that carries it to provide such security, if needed.

This media type also includes URL references which if present must be dereferenced in order to properly interpret the content. This creates additional general security considerations. Decoders should make every effort to validate the origin against other transport signaling, if present.

Interoperability considerations:

ATSC A/336 specifies the format of conforming messages and the interpretation thereof.

Published specification:

This media type registration is an integral part of ATSC A/336, “Content Recovery in Redistribution Scenarios”, Annex E. The payload is defined in Section 5.4.3 of that document. This specification, which contains the JSON schema for the content in Annex B, is available at www.atsc.org/standards.

Applications that use this media type:

ATSC 3.0 television and Internet encoders, decoders and other facility and consumer equipment.

Additional information:

N/A

Person & email address to contact for further information:

Editor, Advanced Television Systems Committee (jwhitaker@atsc.org)

Intended usage:

COMMON

Restrictions on usage:

N/A

Author:

ATSC.

Change controller:

ATSC.

E.2 DYNAMIC EVENT MESSAGE

Type name:

application

Subtype name:

atsc-dynamic-event-message

Required parameters:

N/A

Optional parameters:

N/A

Encoding considerations:

binary

This media type may require non-transparent transfer encoding (such as base64 or Quoted-Printable) on transports not capable of handling binary.

Security considerations:

The security issues associated with this type have not been assessed.

Interoperability considerations:

ATSC A/336 specifies the format of conforming messages and the interpretation thereof.

Published specification:

This media type registration is an integral part of ATSC A/336, "Content Recovery in Redistribution Scenarios", Annex E. The payload is defined in Section 5.1.8 of that document. This specification is available at www.atsc.org/standards.

Applications that use this media type:

ATSC 3.0 television and Internet encoders, decoders and other facility and consumer equipment.

Additional information:

N/A

Person & email address to contact for further information:

Editor, Advanced Television Systems Committee (jwhitaker@atsc.org)

Intended usage:

COMMON

Restrictions on usage:

N/A

Author:

ATSC.

Change controller:

ATSC.

End of Document