media perspectives

Event Triggering Distribution Specification (ETDS)

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Preamble

This Event Triggering Distribution Specification (ETDS) facilitates agreements between television broadcasting and distribution companies concerning in-band distribution of Event Triggering according to SCTE standards. The goal is to enable novel business models by means of support of applications. The ownership of the ETDS resides with the Event Triggering Workgroup of the Dutch Media Perspectives Foundation, having its place of business in Hilversum, the Netherlands.

The participants of the Workgroup believe that harmonisation of the technologies in this document across Europe is desirable and are interested in hearing from other stakeholders who share this vision. It is an option to transfer the document to a suitable international organisation to support further standardisation and application.

Please contact Media Perspectives for feedback, questions, if you wish to contribute or if your organisation wants to use this document for its own use.

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1 Introduction

The purpose of Event Triggering is to allow applications and services downstream to support a variety of features. This document describes a demarcated collection of these applications agreed by the participants of the Event Triggering Workgroup of the Dutch Media Perspectives Foundation. The objective is to achieve interoperability between broadcasters and distributors.

The applications defined in this document only require a subset of the total arrangement of options described in SCTE-104 and SCTE-35. Section 4 of this document displays the syntax of the messages according to this assortment. Broadcast stations can however decide to use more options according to their own needs. In that respect, the agreed applications shall not form a limitation to send more extensive metadata together with their transmission.
In-depth information about the use of this technology can be found in the Event Triggering Distribution Specification Supplement (ETDSS).

2 References

The in-band signalling complies with the following standards and recommendations:

ANSI/SCTE-35 2018	Digital Program Insertion Cueing Message for Cable.
ANSI/SCTE-104 2018	Automation System to Compression System Communications Applications Program Interface.
ANSI/SCTE-67 2017	Recommended Practice for SCTE 35 Digital Program Insertion Cueing Message for Cable.

3 Statements

3.1 Introduction

This section describes the statements agreed by the participants of the Workgroup. In future versions of this document, statements may be changed or added.

3.2 Format and timing

Event Triggering shall be performed according to the following sections of the ETDSS as far as relevant for the applications described in section 4:

- Section 4.2 – Splice commands
- Section 4.3 – Segmentation
- Section 4.4 – Identification
- Section 4.6 – Timestamp
- Section 4.7 – Command cancellation
- Section 4.8 – Shared use of Placement Opportunity Starts

3.3 Delivery restriction fields

By default, the SCTE-35 standard offers the use of delivery restriction flags and field which can be used in every segmentation descriptor. Their use is however not supported in this specification.

3.4 Robustness and stability

Applications downstream need to be robust against reception of additional data as long as it is compliant with the SCTE-35 standard. Data other than expected needs to be ignored and may never lead to instability.

3.5 Encryption

To avoid abuse, it is of utmost importance that the triggering data is blocked at the distributor's head-end or is encrypted downstream, as it would otherwise be accessible at the viewer's end. There shall be no option to disclose the data by the subscriber or by any other non-authorised third party, for example by using a personal computer and/or additional hardware. The specific use of encryption therefore is a main topic of mutual arrangement, clarity and understanding.

4 Applications

4.1 Introduction

This section describes the applications agreed by the participants of the Workgroup. In future versions of this document, applications may be changed or added.

4.2 Trick play enabling

In a non-linear television experience, viewers are served if they can fast-forward and rewind the video stream, features also known as 'trick play'. Some broadcast companies forbid trick play during Breaks. Signalling for this application shall be achieved by use of the following segmentation_type_ids:

- Break Start and Break End, marking the delineation of the full commercial interruption.

The choice where to define the boundaries of a Break is up to the broadcaster to decide.

4.3 Accurate scheduling

In a non-linear television service, viewers benefit if a Program really begins at the indicated time. Signalling for this application shall be achieved by a combined use of the following segmentation_type_ids:

- Program Start and Program End, signalling an individual Program.
- If present, Program Breakaway and Program Resumption, signalling an embedded Program.

The choice where to define the start of a Program is up to the broadcaster to decide.

4.4 Ad replacement

Advertisements can be replaced by different ones. Signalling for this application shall be achieved by a combined use of the following segmentation_type_ids:

- Distributor Placement Opportunity Start and Distributor Placement Opportunity End, marking the window in which replacements may occur.
- Provider Ad Start and Provider Ad End, signalling an individual advertisement.

Advertisements contained within a Distributor Placement Opportunity may be replaced on an individual basis ('like-for-like') as well as the full collection that falls within its delineation. A Distributor Placement Opportunity window is always placed within the boundaries of a Break. The choice where to define the boundaries of a Placement is up to the broadcaster to decide.

5 Applied composition

5.1 Introduction

In order to verify the full syntax, this section shows an overview of SCTE-104 and SCTE-35 segmentation descriptors as far as relevant for the applications described in section 4.

5.1.1 Message composition SCTE-104

Syntax SCTE-104	Bytes	Explanation
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier.
segmentation_event_cancel_indicator	1	Set to 0. No cancellation.
duration	2	The duration of the Segment in whole seconds. This field is set to 0 at all times in case of the following segmentation_type_ids: • Program End • Break End • Program Breakaway • Program Resumption • Provider Advertisement End • Distributor Placement Opportunity End This field is specified in case of the following segmentation_type_ids: • Break Start • Provider Advertisement Start • Distributor Placement Opportunity Start
segmentation_upid_type	1	Set to 0x08. Refers to the Airing ID.
segmentation_upid_length	1	Set to 8, the length of the UPID in bytes.
segmentation_upid()	8	Uniquely identifies the segmentation pair.
segmentation_type_id	1	Indicates the segmentation type and is set to one of the following values: 0x10 Program Start 0x11 Program End

Syntax SCTE-104	Bytes	Explanation
		0x13 Program Breakaway 0x14 Program Resumption 0x22 Break Start 0x23 Break End 0x30 Provider Advertisement Start 0x31 Provider Advertisement End 0x36 Distributor Placement Opportunity Start 0x37 Distributor Placement Opportunity End
segment_num	1	Provides identification for the actual Segment within a collection of Segments. For example, if this descriptor refers to the third Advertisement Start in a Break, this field is set to 3. Instead of a commercial, an Advertisement Start may also signal a promotional item. This field is set to 1 at all times in case of the following segmentation_type_ids: • Program Start/End • Program Breakaway/Resumption In case of a Distributor Placement Opportunity Start, this fields refers to the numbering of Breaks. In case of a Distributor Placement Opportunity End, this field is set to 1. A collection of Distributor Placement Opportunity Ends that share the segmentation_event_id of one common Distributor Placement Opportunity Start is not supported in this specification.

Syntax SCTE-104	Bytes	Explanation
segments_expected	1	Provides a count of the expected number of individual segments within a collection of segments. For example, if this descriptor refers to a Break that contains 22 Advertisement Starts, this field is set to 22. This field is set to 1 at all times in case of the following segmentation_type_ids: • Program Start/End • Program Breakaway/Resumption In case of a Distributor Placement Opportunity Start, this fields refers to the numbering of Breaks. In case of a Distributor Placement Opportunity End, this field is set to 1. A collection of Distributor Placement Opportunity Ends that share the segmentation_event_id of one common Distributor Placement Opportunity Start is not supported in this specification.
duration_extension_frames	1	The total length of the Segment is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag	1	Set to 1. The delivery restriction flags and field are not used.
web_delivery_allowed_flag	1	Not used.
no_regional_blackout_flag	1	Not used.
archive_allowed_flag	1	Not used.
device_restrictions	1	Not used.
insert_sub_segment_info	1	Indicates whether or not sub_segment_num and sub_segments_expected are included in the resulting SCTE-35 segmentation descriptor. This field is set to 1 at all times in case of the following segmentation_type_id: • Distributor Placement Opportunity Start

Syntax SCTE-104	Bytes	Explanation
sub_segment_num	1	Provides identification for the actual Provider or Distributor Placement Opportunity Start/End per individual Break.
sub_segments_expected	1	Provides a count of the expected number of Provider and Distributor Placement Opportunity Starts/Ends per individual Break.
}		

5.1.2 Message composition SCTE-35

Syntax SCTE-35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag	8	Set to 0x02. Defines the body of the descriptor.
descriptor_length	8	The length of the descriptor in bytes.
identifier	32	Set to 'CUEI'. Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier.
segmentation_event_cancel_indicator	1	Set to 0. No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag	1	Set to 1. All PIDs of the program are to be segmented.

Syntax SCTE-35	Bits	Explanation
segmentation_duration_flag	1	Indicates whether or not the descriptor includes the duration. This flag is set to 0 at all times in case of the following segmentation_type_ids: • Program End • Break End • Program Breakaway • Program Resumption • Provider Advertisement End • Distributor Placement Opportunity End This flag is set to 1 in case of the following segmentation_type_ids: • Break Start • Provider Advertisement Start • Distributor Placement Opportunity Start
delivery_not_restricted_flag	1	Set to 1. The delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration	40	Represents the duration of the Segment in 90 kHz clock ticks. This field is absent in case of the following segmentation_type_ids: • Program End • Break End • Program Breakaway • Program Resumption • Provider Advertisement End • Distributor Placement Opportunity End This field is specified in case of the following segmentation_type_ids: • Break Start • Provider Advertisement Start • Distributor Placement Opportunity Start
segmentation_upid_type	8	Set to 0x08. Refers to the Airing ID.
segmentation_upid_length	8	Set to 8, the length of the UPID in bytes.

Syntax SCTE-35	Bits	Explanation
segmentation_upid()	64	Uniquely identifies the segmentation pair.
segmentation_type_id	8	Indicates the segmentation type and is set to one of the following values: 0x10 Program Start 0x11 Program End 0x13 Program Breakaway 0x14 Program Resumption 0x22 Break Start 0x23 Break End 0x30 Provider Advertisement Start 0x31 Provider Advertisement End 0x36 Distributor Placement Opportunity Start 0x37 Distributor Placement Opportunity End
segment_num	8	Provides identification for the actual Segment within a collection of Segments. For example, if this descriptor refers to the third Advertisement Start in a Break, this field is set to 3. Instead of a commercial, an Advertisement Start may also signal a promotional item. This field is set to 1 at all times in case of the following segmentation_type_ids: • Program Start/End • Program Breakaway/Resumption In case of a Distributor Placement Opportunity Start, this fields refers to the numbering of Breaks. In case of a Distributor Placement Opportunity End, this field is set to 1. A collection of Distributor Placement Opportunity Ends that share the segmentation_event_id of one common Distributor Placement Opportunity Start is not supported in this specification.

Syntax SCTE-35	Bits	Explanation
segments_expected	8	Provides a count of the expected number of individual segments within a collection of segments. For example, if this descriptor refers to a Break that contains 22 Advertisement Starts, this field is set to 22. This field is set to 1 at all times in case of the following segmentation_type_ids: • Program Start/End • Program Breakaway/Resumption In case of a Distributor Placement Opportunity Start, this fields refers to the numbering of Breaks. In case of a Distributor Placement Opportunity End, this field is set to 1. A collection of Distributor Placement Opportunity Ends that share the segmentation_event_id of one common Distributor Placement Opportunity Start is not supported in this specification.
sub_segment_num	8	Provides identification for the actual Provider or Distributor Placement Opportunity Start/End per individual Break. This field is present and specified in case of the following segmentation_type_id: • Distributor Placement Opportunity Start
sub_segments_expected	8	Provides a count of the expected number of Provider and Distributor Placement Opportunity Starts/Ends per individual Break. This field is present and specified in case of segmentation_type_id: • Distributor Placement Opportunity Start
}		

6 Abbreviations

ANSI	American National Standards Institute.
ASCII	American Standard Code for Information Interchange.
CNI	Country and Network Identification.
ETDS	Event Triggering Distribution Specification
ETDSS	Event Triggering Distribution Specification Supplement
ID	Identifier.
PID	Packet Identifier.
SCTE	Society of Cable Telecommunications Engineers.
UPID	Unique Program Identifier.