media perspectives

Event Triggering Distribution Specification Supplement (ETDSS)

22 November 2023

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Media Perspectives
Hilversum
The Netherlands
Reference: Event Triggering Workgroup
Author: Richard van Everdingen/Peter Schurman

Preamble

This Event Triggering Distribution Specification Supplement (ETDSS) facilitates agreements between television content providers 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 ETDSS 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

Event Triggering messaging is a technique for carrying notification of upcoming occurrences in the transmission of audio-visual media.

This document is an extension to the Event Triggering Distribution Specification (ETDS). It supplies general information and describes several examples of messages that can be used by audio-visual media content providers.

2 References

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

ANSI/SCTE 35 2020	Digital Program Insertion Cueing Message.
ANSI/SCTE 104 2019	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.
SMPTE ST2010 2008	Vertical Ancillary Data Mapping of ANSI/SCTE 104 messages.
IETF RFC 4122 1998	Universally Unique Identifier.
ETSI TS 101 231 v1.3.1	Television Systems; Register of Country and Network Identification (CNI), Video Programming System (VPS) codes and Application codes for Teletext based systems.
EBU TS 101 231 Codes Register 2017–10b	Television Systems; Register of Country and Network Identification (CNI) and of Video Programming System (VPS) codes.
RFC 4122	Universally Unique IDentifier (UUID) URN Namespace.

3 Event Triggering

3.1 Introduction

This section describes generic application of Event Triggering at audio-visual media content providers and their related distribution companies.

3.2 Applications

The purpose of Event Triggering is to allow applications and services downstream to support a variety of features.

Examples of these features are, but are not limited to:

- National, local and targeted alteration of Programs, Promos and Advertisements.
- Trick play restriction on media players.
- Content blanking.
- Video-on-Demand management.
- Electronic Program Guide update provisioning.
- Archiving support.
- Audio loudness measurements.
- Content provider, Service and Program identification.

More functionality can be added in the future, while using the same or additional in-band information. The signalling can be applied in linear broadcasting, on-demand delivery as well as in streaming video applications. Additional data about the events can be sent by means of a separate path, also known as out-of-band communications. This data channel can provide more detailed information about a certain trigger, its identity and the corresponding action.

3.3 Generation and distribution

Figure 1 shows basic examples of the signal flow between content provider and viewer through several methods of encoding and distribution. Signalling according to SCTE 104 is generated by the play-out automation at a broadcast station and is locally distributed via LAN. Alternatively, SCTE 104 signalling can be generated by an intermediate system that communicates with the play-out automation and the scheduling system. An embedder adds the signalling to the (HD)SDI output of the play-out system according to SMPTE ST2010.

Three different imaginary distribution forms are displayed, each making use of a combination or linear transmission, 'on-top-of-the-network' (OTT) and on-demand delivery:

1. Encoding by the distributor for all services.
2. Encoding by the content provider and transcoding by the distributor for OTT and on-demand reproduction.
3. Transcoding by the distributor for all services combined with replacement and/or insertion of Advertisements provisioned by third parties.

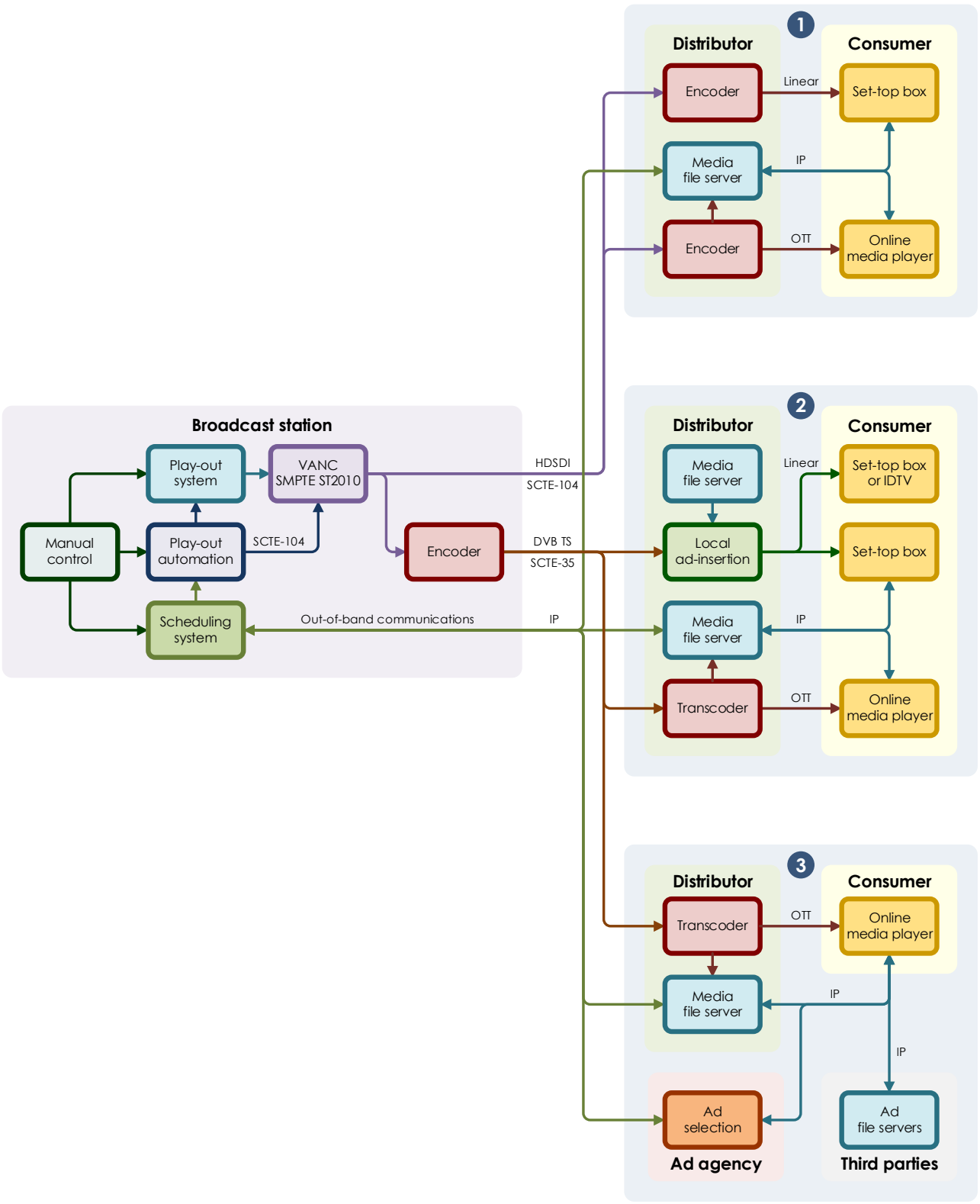


Figure 1 – SCTE 104/35 signal flow examples

Distributors that process the (HD)SDI signal receive the signalling embedded as SCTE 104 messages. A DVB encoder converts the messages into SCTE 35 data, distributed along with a dedicated DVB Packet Identifier (PID), individually and time-aligned combined with video, audio and other data of the television service. The SCTE 35 data can be decoded downstream for features as described in section 3.2.

In the outlined examples, SCTE 35 data serves as an input for OTT systems. Compatible with their characteristic encoding structure, this data is used to modify the manifest file. In case of replacement, the manifest sequence points the media player frame accurately to the video stream of the alternative content, such as a targeted Advertisement. There are several ways to control this process, like ESAM, VAST or SCTE-130. These processes are nevertheless out-of-scope of this document.

The drawing also shows an out-of-band metadata connection by which the in-band triggering can be extended and enriched. This data channel may occupy considerably more information than SCTE 35 messages themselves. One of the ways to send such information is described in SCTE-224, an Event Scheduling and Notification Interface.

Legacy systems such as Electronic Program Guide (EPG) supply schemes can also be used as out-of-band communications for Event Triggering. Practice of this data channel is however not covered by this specification.

4 Format and timing

4.1 Introduction

In this section, the main structure of Event Triggering messages is described.

4.2 Splice commands

The SCTE 35 standard offers the opportunity to keep using traditional splice_insert() commands in order to stay backward compatible with older equipment. In this specification, it is assumed that downstream applications are up to date. To avoid interference, all events are signalled using time_signal() messages only, enriched with segmentation descriptors.

4.3 Segmentation

According to the SCTE 104 and SCTE 35 standards, all individual events in the playlist can be signalled by use of segmentation descriptors. In this specification, individual event elements can be distinguished as follows:

Segment A uniquely identifiable audio-visual item playlist element such as a Program, a Chapter, a Promo (promotional item) or an Advertisement.

Program An individual, self-contained audio-visual item, not being a Promo or an Advertisement.

Chapter A part of a Program followed or preceded by one or more Promos and/or Advertisements or by the Chapter of another Program. Chapters are sequentially numbered per Program, starting at one within a given collection.

Break A complete block of one or more Promos and/or Advertisements in advance of, interrupting or following up a Program. Breaks are sequentially numbered per Program, starting at one within a given collection.

A Break in between two Programs can either:

- Belong to the first Program as a whole.
- Belong to the second Program as a whole.
- Not belong to a Program and be considered standalone.
- Belong to one or more Programs for a part. In that case the intermission should be split into at least two Breaks, where the nearest one in time is associated with that relevant Program.

Promo An individual, self-contained audio-visual non-merchandisable or promotional item, not being an Advertisement or a Program. If a content provider does not support dedicated identification of Promos, these Segments can be signalled as Advertisements. Promos are sequentially numbered per Break, starting at one within a given collection.

Advertisement	An individual, self-contained merchandisable audio-visual item, not being a Program or a Promo. If a content provider does not support dedicated identification of Promos, these Segments can be signalled as Advertisements as well. Advertisements are sequentially numbered per Break, starting at one within a given collection.
Alternate Content Opportunity	A delineation of Segments on Program level, such as a block of one or more Chapters, Breaks, Placement Opportunities, Promos and Advertisements. Among other possible applications, an Alternate Content Opportunity is typically used to identify replacement of that block of content further downstream the way between content provider and viewer. An example is a block being available to be locally replaced by regional broadcasting. There can be more than one Alternate Content Opportunity present within a Program. A collection of Alternate Content Opportunities is sequentially numbered per Program, starting at one within a given collection.
Provider Placement Opportunity	A delineation of Segments on Break level, such as a block of one or more Promos and/or Advertisements. Among other possible applications, a Provider Placement Opportunity is typically used to identify replacement of that block of content further downstream the way between content provider and viewer. There can be more than one Provider Placement Opportunity present within a Break. A collection of Provider and Distributor Placement Opportunities is sequentially numbered per Break, starting at one within a given collection.
Distributor Placement Opportunity	A delineation of Segments on Break level, such as a block of one or more Promos and/or Advertisements. Among other possible applications, a Distributor Placement Opportunity is typically used to identify replacement of that block of content further downstream the way between content provider and viewer. There can be more than one Distributor Placement Opportunity present within a Break. A collection of Provider and Distributor Placement Opportunities is sequentially numbered per Break, starting at one within a given collection.
Heartbeat	An optional repetitive message that can be used to update applications and to monitor normal operation of the system.

Note: PPO shall be used for 'per advertisement' replacements and DPO for 'breaks' or 'part of a of break' replacements in use cases in the Netherlands.

Signalling is performed using the segmentation_type_id values as defined in Table 22 of SCTE 35. See section 4.5 for details.

4.4 Identification

The SCTE 35 standard allows the use of segmentation_type_id and segmentation_upid_type descriptors to send identification about the transmitted content. Table 21 of SCTE 35 offers multiple data types to be used as Unique Program Identifier (UPID).

In this specification, two types have been selected out of that table:

- Universally Unique Identifier (UUID, type 0x10) – A 128-bit hexadecimal value.
- AiringID (type 0x08) – A 64-bit unsigned integer value, expressed as hexadecimal.

Consequently, the UPID inside a Start or End signalling segmentation descriptor is arranged as either one of the two following structures:

- **Universally Unique Identifier**

Syntax SCTE 104	Bytes	Explanation
segmentation_upid_type	1	Set to 0x10. Refers to UUID.
segmentation_upid_length	1	Set to 16, the length of the UPID in bytes.
segmentation_upid	16	Uniquely identifies the segmentation message pair in form of a 128-bit hexadecimal value.

- **AiringID**

Syntax SCTE 104	Bytes	Explanation
segmentation_upid_type	1	Set to 0x08. Refers to AiringID.
segmentation_upid_length	1	Set to 8, the length of the UPID in bytes.
segmentation_upid	8	Uniquely identifies the segmentation message pair in form of a 64-bit unsigned integer value, expressed as hexadecimal.

The content of the structures above is identical in a corresponding SCTE 35 message.

4.5 Message composition

According to this specification, the information is sent as:

- A general part A that contains the Start and End signalling including UPID. The table on the next page provides an overview of the segmentation messages specified in this document. The listed messages are expected to appear in pairs. For a complete overview of segmentation_type_ids, see table 22 of SCTE 35.
- A specific part B, dedicatedly transmitted as Content Identification and sent as Managed Private UPID (MPU). If desired by the content provider, it contains additional identification and/or data for specific applications. The information can also be sent in messages that signal individual Promos and Advertisements in order to refer to the Program they run with. See section 6 for operator specific implementation of this part.

General part A:

segmentation_type_id	0x02	Private
	0x10	Program Start
	0x11	Program End
	or	
	0x12	Program Early Termination
	0x13	Program Breakaway
	0x14	Program Resumption
	0x20	Chapter Start
	0x21	Chapter End
	0x22	Break Start
	0x23	Break End
	0x30	Provider Advertisement Start
	0x31	Provider Advertisement End
	0x32	Distributor Advertisement Start
	0x33	Distributor Advertisement End
	0x34	Provider Placement Opportunity Start
	0x35	Provider Placement Opportunity End
	0x36	Distributor Placement Opportunity Start
	0x37	Distributor Placement Opportunity End
	0x3C	Provider Promo Start
	0x3D	Provider Promo End
	0x3E	Distributor Promo Start
	0x3F	Distributor Promo End
	0x40	Unscheduled Event Start
	0x41	Unscheduled Event End
	0x42	Alternate Content Opportunity Start
	0x43	Alternate Content Opportunity End
	0x50	Network Start
	0x51	Network End
segmentation_upid_type	0x10	UUID
	or	
	0x08	AiringID
segmentation_upid	Uniquely identifies content such as a Program, a Promo or an Advertisement, or delineation of a collection of Segments such as an Alternate Content Opportunity, a Break or a Placement	

	Opportunity. In this specification, the UPID of the first Chapter carries the same value as its associated Program.

A Program End can be replaced by a Program Early Termination to signal an unexpected closing. A Program can also include a Breakaway (a Program in a Program) followed up by a Resumption (a continuation of the previous Program after a Breakaway). These exceptions only apply if inserted between Program Start and Program End or between Program Start and Program Early Termination.

Private descriptor 0x02 may be used for broadcaster specific use cases. E.g. In-Band pre-fetch signalling.

Specific part B:	
segmentation_type_id	0x01 Content Identification
segmentation_upid_type	0x0C Managed Private UPID (MPU)
format_identifier	A 32-bit string 'Format Identifier', set to the SMPTE registered identity of the broadcast organisation using this MPU(). In the examples in section 5, the name 'TVST' is used, referring to the imaginary content provider 'TV Station'.
private_cni	A 16-bit hexadecimal value 'Country and Network Identification (CNI)', which refers to the ETSI TS 101 231 Codes Register. The CNI identifies the Service Name. In the examples in section 5, the imaginary code '3199' is used.
private_version	An 8-bit unsigned numeric value 'version number', which indicates the lay-out version of the data. It is changed if a new one is not backward compatible with earlier versions. Extension of the data fields while the original content is preserved does not lead to a new version number. Applications downstream shall always be prepared that the number of data fields in the descriptor loop may be extended.
Additional identification fields	The next part contains one or more additional Program identifiers. Section 6 specifies this identification for each organisation participating in the composition of this specification, if relevant. In the examples in section 5, the following fields are used:
private_file_id	A 10 character long alphanumeric string 'File ID' of the imaginary broadcast company 'TV Station', which refers to the stored file of the running Program.

private_registry_id	A 10 character long alphanumeric string 'Registry ID' of the imaginary broadcast company 'TV Station', which refers to the stored entry in its registry of Programs.

4.6 Heartbeat

The Heartbeat is an optional repetitive message type B as described in the previous section, which can be used to update applications and to monitor normal operation of the system. It includes the latest Content Identification data which allows periodic signalling of the running Program and allows quick recovery of the applications after a failure. Section 5.11 shows an example of the syntax.

A proper frequency of the Heartbeat signal is around every 60 seconds, restarting its cycle at presence of other messages. The frequency can be changed according to necessity and capacity. Start and End messages always have priority above Heartbeats.

4.7 Timestamp

Scheduled messages must contain a valid timestamp that points to the frame accurate start or end time of the event. To avoid undefined behaviour, a pre-roll time of 4 seconds is included in the SCTE 104 message. There are nevertheless always situations where the start or end of a broadcast item must be signalled immediately instead of planned. This can be done by setting the time_type to 0 in SCTE 104 and the time_specified_flag to 0 in SCTE 35, which means that there is no time reference included in the message. A typical application is the end of a live event that is determined real-time. The consequence of using such an immediate command is that processes that make use of the triggering cannot be controlled with the usual timing accuracy. Organisations and applications that process the signalling must be aware that this may happen and shall handle them in the best possible manner.

Informative messages such as the Heartbeat are also sent immediately as explained above, as exact timing of this message is irrelevant and to ensure no influence on the encoding of the video stream.

The timing reference is UTC. To achieve frame accurate timing, the Automation System generating the SCTE 104 messages must be able to configure a static time offset to compensate for any video delay between the play-out system and the embedder or the encoder. If the Automation System feeds the same message to more than one encoder – for example, the same TV channel in HD and SD resolution – this time offset must be independently configurable if different delays exist in the signal chain.

Sections 5.2 and 5.3 show the syntax of the timing descriptors in SCTE 104 and SCTE 35 format respectively.

4.8 Command cancellation

According to the standard, an issued command can be updated by sending a new message with the correct or more accurate data or it can be cancelled by a message that has the segmentation_event_cancel_indicator_flag set to 1. Command cancellation is however not supported in this specification.

4.9 Shared use of Placement Opportunity Starts

A collection of Placement Opportunity Ends that share the segmentation_event_id of one common Placement Opportunity Start is not supported in this specification.

4.10 Sample events

Figure 2 shows an example of the hierarchical sequence of several segmentation descriptors within a complete message and points out how they are numbered using the fields segment_num, segments_expected, sub_segment_num and sub_segments_expected.

Numbering is useful for error detection purposes. Its use is recommended, but also optional in this specification. The samples do not indicate a limitation; several combinations of segmentation descriptors can be active at the same time. A running Program can also be interrupted by another one by signalling of a Program Breakaway.

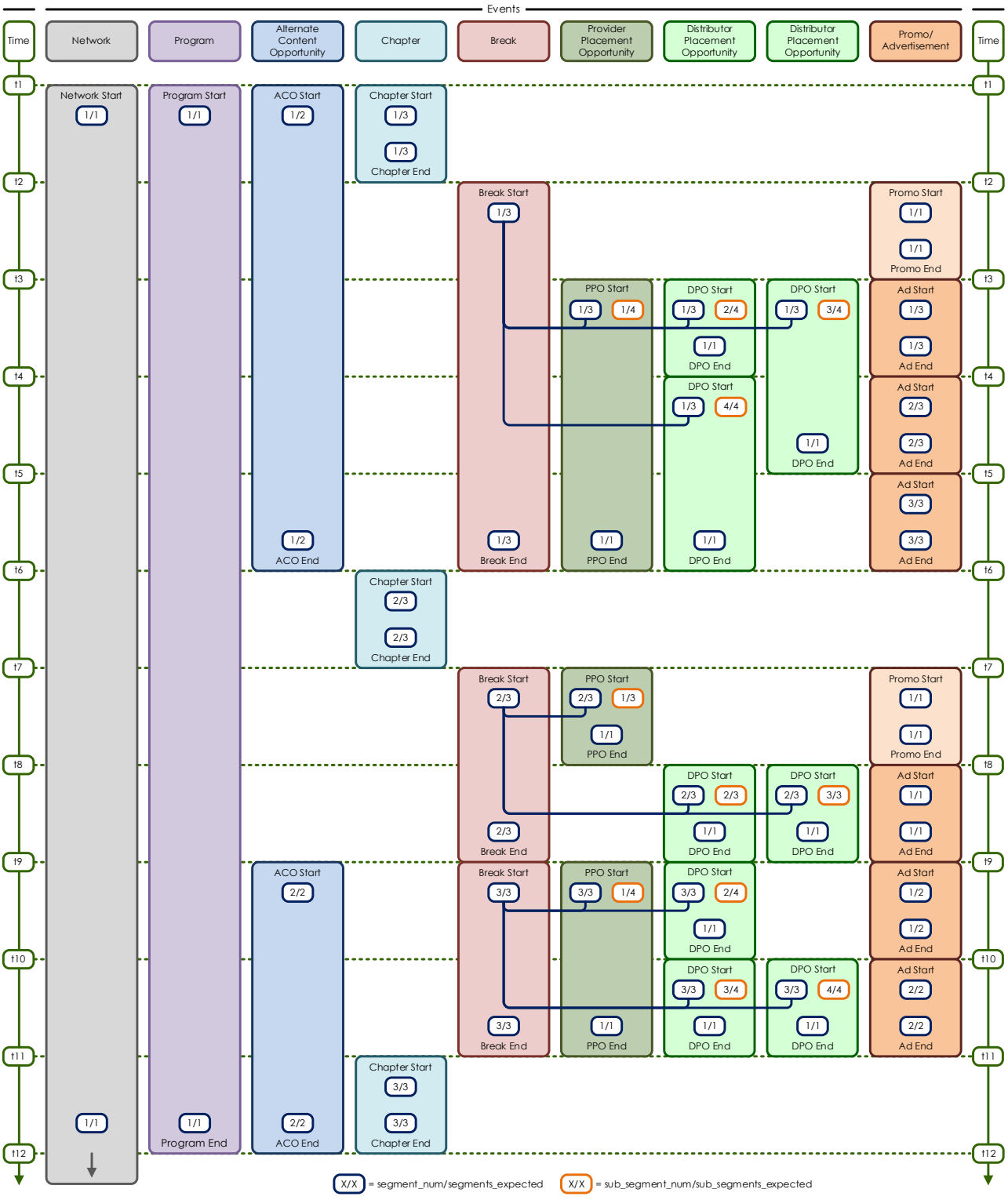


Figure 2 – Event Triggering examples including segmentation descriptor hierarchy and numbering

5 Applied composition

5.1 Introduction

In order to allow verification of the full syntax, this section shows examples of SCTE 104 and SCTE 35 segmentation descriptors which can support further deployment by, for example, software programmers of audio-visual media content providers, their related distributors and relevant manufacturers.

In the table below, imaginary transmission events can be distinguished that carry randomly chosen UPID values and fictional private data. These examples can be recognised in the messages elaborated further ahead. For example: 'Program 2 – Chapter 1', including the UPID defined below, shows up in events describing a Program transition (section 5.4) as well as in the paragraph that describes the start of a Break (section 5.5).

Another example is the private data of 'Program 2' that appears in cases unfolding a Program transition (section 5.4), a Break (section 5.5/5.6), an Advertisement replacement opportunity (section 5.7/5.8), a Program-based replacement opportunity (section 5.9/5.10) and the example of a Heartbeat (section 5.11). Both table and messages show that the Break, the Placement Opportunities and the three Advertisements are linked to Program 2. The attached Content Identification descriptor therefore carries the private data belonging to that Program. The Heartbeat in its turn, is simply a copy of the last sent Content Identification message.

For simplicity and clarity of this document, all non-operator-specific examples use a UUID as UPID. The AiringID could however also apply in any given case. Hexadecimal format is displayed with the prefix '0x'. Numbers are formatted as unsigned integers. Information between quotes is arranged as alphanumeric text. If the length of the textual data is shorter than the assigned space, the notation includes the sign '\0', which stands for a so-called null-terminated string. This points to the location of the data inside the allocated space and indicates the use of null characters, also known as ASCII NULL or 0x00, in the remaining part.

Program 1		**Program 1 – Chapter 4**	
segmentation_upid	0xd7b6360232ef406b93b2583f667f1f58	segmentation_upid	0x077977a1b6354d34b6cc32676fa1694f

Program 2		**Program 2 – Chapter 1**	
segmentation_upid	0x477e6c095dff4cdeba5afdec5d9b35a9	segmentation_upid	0x477e6c095dff4cdeba5afdec5d9b35a9
private_file_id	'5F7368276'	private_file_id	'5F7368276'
private_registry_id	'J1B038792'	private_registry_id	'J1B038792'

Break 1 (linked to Program 2)		Provider Placement Opportunity 1 (linked to Program 2)	
segmentation_upid	0x75d262739e704090adbcd2f996ee9f63	segmentation_upid	0x9ad81fdacf3b4db080f2703548f4a98a
private_file_id	'5F7368276'	private_file_id	'5F7368276'
private_registry_id	'J1B038792'	private_registry_id	'J1B038792'

Distributor Placement Opportunity 1 (linked to Program 2)		Provider Advertisement 1 (linked to Program 2)	
segmentation_upid	0x3a9cfe8763be49eeac9b3ad59d9f4b37	segmentation_upid	0xfc812bebd38a4b009f768244e9630f02
private_file_id	'5F7368276'	private_file_id	'5F7368276'
private_registry_id	'J1B038792'	private_registry_id	'J1B038792'

Provider Advertisement 2 (linked to Program 2)		Provider Advertisement 3 (linked to Program 2)	
segmentation_upid	0xd1104bfdde8a4f3bb78aa0f88a5063b1	segmentation_upid	0x7ce2b819edbc43fab26d0d7ea80fa25b
private_file_id	'5F7368276'	private_file_id	'5F7368276'
private_registry_id	'J1B038792'	private_registry_id	'J1B038792'

Program 2 – Chapter 2		Program 3	
segmentation_upid	0xff4c549452db45b9a159ee53daaf9611	segmentation_upid	0x50988f8f48d4411bb26b12c323c1077d
private_file_id	'5F7368276'	private_file_id	'5A6410575'
private_registry_id	'J1B038792'	private_registry_id	'J1P044862'

Program 3 – Chapter 1		Alternate Content Opportunity Start 1 (linked to Program 3)	
segmentation_upid	0x50988f8f48d4411bb26b12c323c1077d	segmentation_upid	0xdae24836ce2f471293c58d9e5564edbb
private_file_id	'5A6410575'	private_file_id	'5A6410575'
private_registry_id	'J1P044862'	private_registry_id	'J1P044862'

Program 4		Program 4 – Chapter 1	
segmentation_upid	0x78e874efb70a4c7d9b75c34c148c9f2a	segmentation_upid	0x78e874efb70a4c7d9b75c34c148c9f2a
private_file_id	'5C3448751'	private_file_id	'5C3448751'
private_registry_id	'J1M015239'	private_registry_id	'J1M015239'

5.2 Base message – Scheduled

Regarding timing, the following syntax is used in a scheduled Start message that contains one or more segmentation descriptors.

5.2.1 Message composition SCTE 104

Syntax SCTE 104	Bytes	Explanation
timestamp()		
{		
time_type = 2	1	Defines VITC as the timing reference.
hours = 20	1	The hour of the day in 24-hour format (20 in this example).
minutes = 15	1	The minutes within the hour (15 in this example).
seconds = 10	1	The seconds within the minute (10 in this example).
frames = 5	1	The number of frames within the second (5 in this example).
}		
time_signal_request_data()		
{		
pre-roll_time = 4000	2	Adds pre-roll time expressed in milliseconds to the message, signalling that the splice point is programmed 4 seconds later than the time indicated in timestamp().
}		

5.2.2 Message composition SCTE 35

Syntax SCTE 35	Bits	Explanation
splice_time()		
{		
time_specified_flag = 1	1	Indicates that a timestamp is included in the message.
reserved	6	Fills up the remaining byte.
pts_time	33	Time in 90 kHz clock ticks that represents the intended splice point. This value may have an offset defined by the field pts_adjustment in the splice_info_section of the message.
}		

5.3 Base message – Immediate

The following syntax is used in an immediate Start message that contains one or more segmentation descriptors.

5.3.1 Message composition SCTE 104

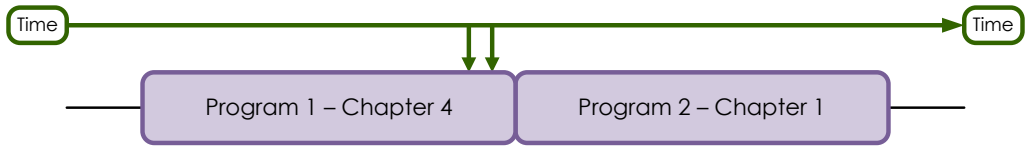
Syntax SCTE 104	Bytes	Explanation
timestamp()		
{		
time_type = 0	1	Signals an immediate trigger.
}		
time_signal_request_data()		
{		
pre-roll_time = 0	2	Signals that the message must be processed immediately.
}		

5.3.2 Message composition SCTE 35

Syntax SCTE 35	Bits	Explanation
splice_time()		
{		
time_specified_flag = 0	1	Signals an immediate trigger.
reserved	7	Fills up the remaining byte.
}		

5.4 Program transition

The following example specifies the syntax transmitted at the end of 'Program 1 – Chapter 4' and the start of 'Program 2 – Chapter 1'.



5.4.1 Message composition SCTE 104

Syntax SCTE 104	Bytes	Explanation
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Chapter Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x077977a1b6354d34b6cc32676fa1694f	16	Uniquely identifies 'Program 1 – Chapter 4'.
segmentation_type_id = 0x21	**1**	**Chapter End.**
segment_num = 4	1	Fourth Chapter within the Program.
segments_expected = 4	1	A total of 4 Chapters is expected within the Program.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.

Syntax SCTE 104	Bytes	Explanation
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Program Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0xd7b6360232ef406b93b2583f667f1f58	16	Uniquely identifies 'Program 1'.
segmentation_type_id = 0x11	**1**	**Program End.**
segment_num = 1	1	This field is set to 1 in Program messages.
segments_expected = 1	1	This field is set to 1 in Program messages.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.

Syntax SCTE 104	Bytes	Explanation
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Program End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 1231	2	Duration of 'Program 2' in seconds, including assigned Breaks. This field shall be 0 if the expected duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x477e6c095dff4cdeba5afdec5d9b35a9	16	Uniquely identifies 'Program 2'.
segmentation_type_id = 0x10	**1**	**Program Start.**
segment_num = 1	1	This field is set to 1 in Program messages.
segments_expected = 1	1	This field is set to 1 in Program messages.
duration_extension_frames = 2	1	The total length of the Program is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.

Syntax SCTE 104	Bytes	Explanation
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Chapter End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 89	2	Duration of 'Program 2 – Chapter 1' in seconds. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x477e6c095dff4cdeba5afdec5d9b35a9	16	Uniquely identifies 'Program 2 – Chapter 1'.
segmentation_type_id = 0x20	**1**	**Chapter Start.**
segment_num = 1	1	First Chapter within the Program.
segments_expected = 2	1	A total of 2 Chapters is expected within the Program.
duration_extension_frames = 18	1	The total length of the Chapter is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.

Syntax SCTE 104	Bytes	Explanation
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in Content Identification messages.
segmentation_upid_type = 0x0C	**1**	**Managed Private UPID.**
segmentation_upid_length = 27	1	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	4	Representing the name 'TV Station'.
private_cni = 0x3199	2	Signals the CNI of the TV Station's service.
private_version = 1	1	Version of the specification.
private_file_id = '5F7368276\0'	10	Carries the File ID of 'Program 2'.
private_registry_id = 'J1B038792\0'	10	Carries the Registry ID of 'Program 2'.
segmentation_type_id = 0x01	**1**	**Content Identification.**
segment_num = 0	1	This field is set to 0 in Content Identification messages.
segments_expected = 0	1	This field is set to 0 in Content Identification messages.
duration_extension_frames = 0	1	This field is set to 0 in Content Identification messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.

Syntax SCTE 104	Bytes	Explanation
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		

5.4.2 Message composition SCTE 35

Syntax SCTE 35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Chapter Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x077977a1b6354d34b6cc32676fa1694f	128	Uniquely identifies 'Program 1 – Chapter 4'.
segmentation_type_id = 0x21	**8**	**Chapter End.**

Syntax SCTE 35	Bits	Explanation
segment_num = 4	8	Fourth Chapter within the Program.
segments_expected = 4	8	A total of 4 Chapters is expected within the Program.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Program Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0xd7b6360232ef406b93b2583f667f1f58	128	Uniquely identifies 'Program 1'.
segmentation_type_id = 0x11	**8**	**Program End.**
segment_num = 1	8	This field is set to 1 in Program messages.
segments_expected = 1	8	This field is set to 1 in Program messages.
}		

Syntax SCTE 35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Program End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 110797200	40	Duration of 'Program 2' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x477e6c095dff4cdeba5afdec5d9b35a9	128	Uniquely identifies 'Program 2'.
segmentation_type_id = 0x10	**8**	**Program Start.**
segment_num = 1	8	This field is set to 1 in Program messages.
segments_expected = 1	8	This field is set to 1 in Program messages.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.

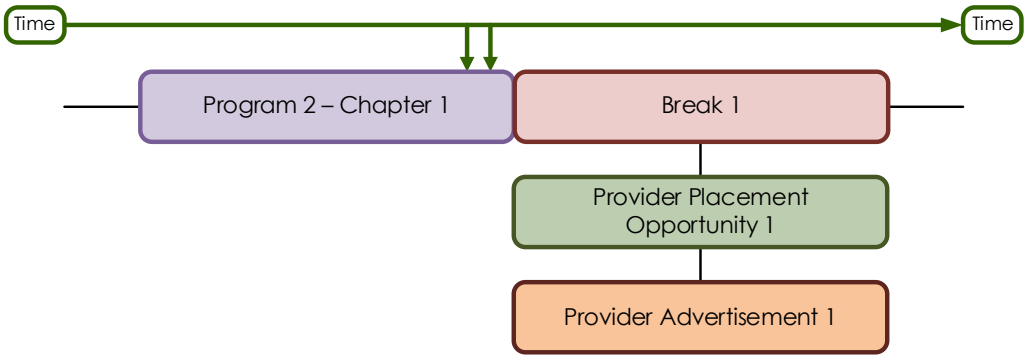
Syntax SCTE 35	Bits	Explanation
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Chapter End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 8074800	40	Duration of 'Program 2 – Chapter 1' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x477e6c095dff4cdeba5afdec5d9b35a9	128	Uniquely identifies 'Program 2 – Chapter 1'.
segmentation_type_id = 0x20	**8**	**Chapter Start.**
segment_num = 1	8	First Chapter within the Program.
segments_expected = 2	8	A total of 2 Chapters is expected within the Program.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 42	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier.

Syntax SCTE 35	Bits	Explanation
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	Not used. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x0C	**8**	**Managed Private UPID.**
segmentation_upid_length = 27	8	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	32	Representing the name 'TV Station'.
private_cni = 0x3199	16	Signals the CNI of the TV Station's service.
private_version = 1	8	Version of the specification.
private_file_id = '5F7368276\0'	80	Carries the File ID of 'Program 2'.
private_registry_id = 'J1B038792\0'	80	Carries the Registry ID of 'Program 2'.
segmentation_type_id = 0x01	**8**	**Content Identification.**
segment_num = 0	8	This field is set to 0 in Content Identification messages.
segments_expected = 0	8	This field is set to 0 in Content Identification messages.
}		

5.5 Start of a Break

The following example specifies the syntax transmitted at the end of 'Program 2/Chapter 1' and the start of 'Break 1/Provider Placement Opportunity 1/Provider Advertisement 1'. In this illustration, the Placement Opportunity is present to allow, for example, selective replacement of the Advertisement.

Note: If the Break starts with a Promo and dedicated signalling of these Segments is supported, 'Provider Advertisement Start' is replaced by 'Provider Promo Start'.



5.5.1 Message composition SCTE 104

Syntax SCTE 104	Bytes	Explanation
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Chapter Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x477e6c095dff4cdeba5afdec5d9b35a9	16	Uniquely identifies 'Program 2 – Chapter 1'.
segmentation_type_id = 0x21	**1**	**Chapter End.**
segment_num = 1	1	First Chapter within the Program.
segments_expected = 2	1	A total of 2 Chapters is expected within the Program.

Syntax SCTE 104	Bytes	Explanation
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Break End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 312	2	Duration of 'Break 1' in seconds. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x75d262739e704090adbcd2f996ee9f63	16	Uniquely identifies 'Break 1'.
segmentation_type_id = 0x22	**1**	**Break Start.**
segment_num = 1	1	First Break associated with the running Program.
segments_expected = 1	1	A total of 1 Break associated with the Program is expected.

Syntax SCTE 104	Bytes	Explanation
duration_extension_frames = 12	1	The total length of the Break is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Provider Placement Opportunity End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 274	2	Duration of the Provider Placement Opportunity in seconds. This field shall be 0 if the expected duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x9ad81fdacf3b4db080f2703548f4a98a	16	Uniquely identifies 'Provider Placement Opportunity 1'.
segmentation_type_id = 0x34	**1**	**Provider Placement Opportunity Start.**

Syntax SCTE 104	Bytes	Explanation
segment_num = 1	1	First Break associated with the running Program.
segments_expected = 1	1	A total of 1 Break associated with the Program is expected.
duration_extension_frames = 8	1	The total length of the Placement is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 1	1	The descriptor contains sub-segment numbering.
sub_segment_num = 1	1	First Placement within the current Break.
sub_segments_expected = 1	1	One Placement is expected in the current Break.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Provider Advertisement End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 28	2	Duration of 'Provider Advertisement 1' in seconds. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0xfc812bebd38a4b009f768244e9630f02	16	Uniquely identifies 'Provider Advertisement 1'.

Syntax SCTE 104	Bytes	Explanation
segmentation_type_id = 0x30	**1**	**Provider Advertisement Start.**
segment_num = 1	1	First Provider Advertisement within the Break.
segments_expected = 1	1	One Provider Advertisement is expected within the Break.
duration_extension_frames = 7	1	The total length of the Advertisement is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in Content Identification messages.
segmentation_upid_type = 0x0C	**1**	**Managed Private UPID.**
segmentation_upid_length = 27	1	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	4	Representing the name 'TV Station'.
private_cni = 0x3199	2	Signals the CNI of the TV Station's service.

Syntax SCTE 104	Bytes	Explanation
private_version = 1	1	Version of the specification.
private_file_id = '5F7368276\0'	10	Carries the File ID of 'Program 2'.
private_registry_id = 'J1B038792\0'	10	Carries the Registry ID of 'Program 2'.
segmentation_type_id = 0x01	**1**	**Content Identification.**
segment_num = 0	1	This field is set to 0 in Content Identification messages.
segments_expected = 0	1	This field is set to 0 in Content Identification messages.
duration_extension_frames = 0	1	This field is set to 0 in Content Identification messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		

5.5.2 Message composition SCTE 35

Syntax SCTE 35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.

Syntax SCTE 35	Bits	Explanation
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Chapter Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x477e6c095dff4cdeba5afdec5d9b35a9	128	Uniquely identifies 'Program 2 – Chapter 1'.
segmentation_type_id = 0x21	**8**	**Chapter End.**
segment_num = 1	8	First Chapter within the Program.
segments_expected = 2	8	A total of 2 Chapters is expected within the Program.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Break End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.

Syntax SCTE 35	Bits	Explanation
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 28123200	40	Duration of 'Break 1' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x75d262739e704090adbcd2f996ee9f63	128	Uniquely identifies 'Break 1'.
segmentation_type_id = 0x22	**8**	**Break Start.**
segment_num = 1	8	First Break associated with the running Program.
segments_expected = 1	8	A total of 1 Break associated with the Program is expected.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 38	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Provider Placement Opportunity End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.

Syntax SCTE 35	Bits	Explanation
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 24688800	40	Duration of 'Provider Placement Opportunity 1' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x9ad81fdacf3b4db080f2703548f4a98a	128	Uniquely identifies 'Provider Placement Opportunity 1'.
segmentation_type_id = 0x34	**8**	**Provider Placement Opportunity Start.**
segment_num = 1	8	First Break associated with the running Program.
segments_expected = 1	8	A total of 1 Break associated with the Program is expected.
sub_segment_num = 1	8	First Placement within the current Break.
sub_segments_expected = 1	8	One Placement is expected in the current Break.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Provider Advertisement End message.

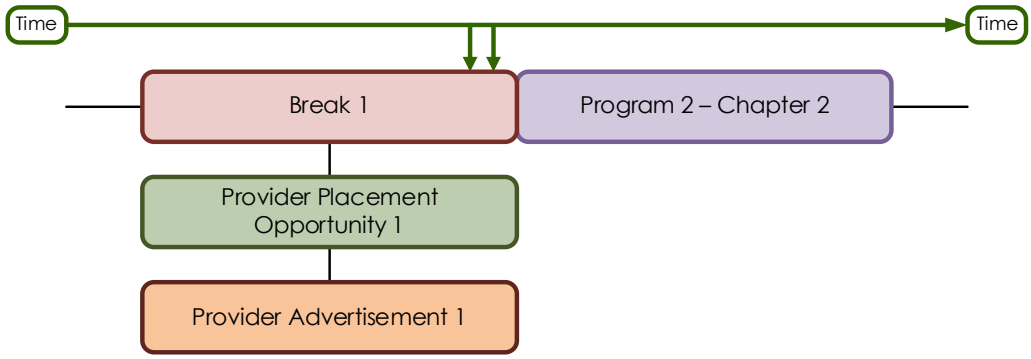
Syntax SCTE 35	Bits	Explanation
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 2545200	40	Duration of 'Provider Advertisement 1' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0xfc812bebd38a4b009f768244e9630f02	128	Uniquely identifies 'Provider Advertisement 1'.
segmentation_type_id = 0x30	**8**	**Provider Advertisement Start.**
segment_num = 1	8	First Provider Advertisement within the Break.
segments_expected = 1	8	One Provider Advertisement is expected within the Break.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 42	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.

Syntax SCTE 35	Bits	Explanation
segmentation_duration_flag = 0	1	Not used. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x0C	**8**	**Managed Private UPID.**
segmentation_upid_length = 27	8	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	32	Representing the name 'TV Station'.
private_cni = 0x3199	16	Signals the CNI of the TV Station's service.
private_version = 1	8	Version of the specification.
private_file_id = '5F7368276\0'	80	Carries the File ID of 'Program 2'.
private_registry_id = 'J1B038792\0'	80	Carries the Registry ID of 'Program 2'.
segmentation_type_id = 0x01	**8**	**Content Identification.**
segment_num = 0	8	This field is set to 0 in Content Identification messages.
segments_expected = 0	8	This field is set to 0 in Content Identification messages.
}		

5.6 End of a Break

The following example specifies the syntax transmitted at the end of 'Break 1/Provider Placement Opportunity 1/Provider Advertisement 1' and the start of 'Program 2 – Chapter 2'. In this illustration, the Provider Placement Opportunity is present to allow, for example, selective replacement of the Advertisement.

Note: If the Break ends with a Promo and dedicated signalling of these Segments is supported, 'Provider Advertisement End' is replaced by 'Provider Promo End'.



5.6.1 Message composition SCTE 104

Syntax SCTE 104	Bytes	Explanation
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Provider Advertisement Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0xfc812bebd38a4b009f768244e9630f02	16	Uniquely identifies 'Provider Advertisement 1'.
segmentation_type_id = 0x31	**1**	**Provider Advertisement End.**
segment_num = 1	1	First Provider Advertisement within the Break.

Syntax SCTE 104	Bytes	Explanation
segments_expected = 1	1	One Provider Advertisement is expected within the Break.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Provider Placement Opportunity Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x9ad81fdacf3b4db080f2703548f4a98a	16	Uniquely identifies 'Provider Placement Opportunity 1'.
segmentation_type_id = 0x35	**1**	**Provider Placement Opportunity End.**
segment_num = 1	1	This field is set to 1 in Placement Opportunity End messages.
segments_expected = 1	1	This field is set to 1 in Placement Opportunity End messages.
duration_extension_frames = 0	1	This field is set to 0 in End messages.

Syntax SCTE 104	Bytes	Explanation
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Break Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x75d262739e704090adbcd2f996ee9f63	16	Uniquely identifies 'Break 1'.
segmentation_type_id = 0x23	**1**	**Break End.**
segment_num = 1	1	First Break associated with the running Program.
segments_expected = 1	1	A total of 1 Break associated with the Program is expected.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.

Syntax SCTE 104	Bytes	Explanation
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Chapter End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 1650	2	Duration of 'Program 2 – Chapter 2' in seconds. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0xff4c549452db45b9a159ee53daaf9611	16	Uniquely identifies 'Program 2 – Chapter 2'.
segmentation_type_id = 0x20	**1**	**Chapter Start.**
segment_num = 2	1	Second Chapter within the Program.
segments_expected = 2	1	A total of 2 Chapters is expected within the Program.
duration_extension_frames = 11	1	The total length of the Chapter is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.

Syntax SCTE 104	Bytes	Explanation
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in Content Identification messages.
segmentation_upid_type = 0x0C	**1**	**Managed Private UPID.**
segmentation_upid_length = 27	1	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	4	Representing the name 'TV Station'.
private_cni = 0x3199	2	Signals the CNI of the TV Station's service.
private_version = 1	1	Version of the specification.
private_file_id = '5F7368276\0'	10	Carries the File ID of 'Program 2'.
private_registry_id = 'J1B038792\0'	10	Carries the Registry ID of 'Program 2'.
segmentation_type_id = 0x01	**1**	**Content Identification.**
segment_num = 0	1	This field is set to 0 in Content Identification messages.
segments_expected = 0	1	This field is set to 0 in Content Identification messages.
duration_extension_frames = 0	1	This field is set to 0 in Content Identification messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.

Syntax SCTE 104	Bytes	Explanation
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		

5.6.2 Message composition SCTE 35

Syntax SCTE 35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Provider Advertisement Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0xfc812bebd38a4b009f768244e9630f02	128	Uniquely identifies 'Provider Advertisement 1'.
segmentation_type_id = 0x31	**8**	**Provider Advertisement End.**
segment_num = 1	8	First Provider Advertisement within the Break.
segments_expected = 1	8	One Provider Advertisement is expected within the Break.
}		
segmentation_descriptor()		
{		

Syntax SCTE 35	Bits	Explanation
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Provider Placement Opportunity Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x9ad81fdacf3b4db080f2703548f4a98a	128	Uniquely identifies 'Provider Placement Opportunity 1'.
segmentation_type_id = 0x35	**8**	**Provider Placement Opportunity End.**
segment_num = 1	8	This field is set to 1 in Placement Opportunity End messages.
segments_expected = 1	8	This field is set to 1 in Placement Opportunity End messages.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.

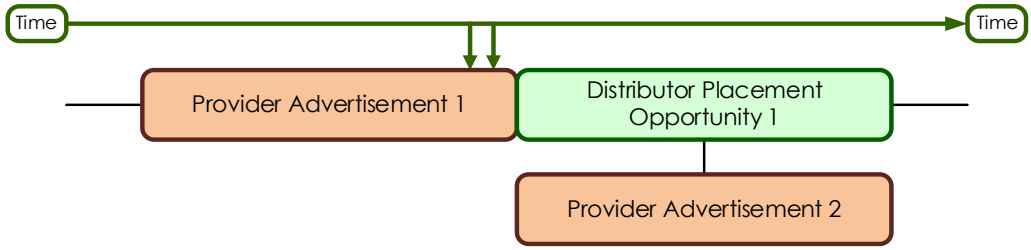
Syntax SCTE 35	Bits	Explanation
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Break Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x75d262739e704090adbcd2f996ee9f63	128	Uniquely identifies 'Break 1'.
segmentation_type_id = 0x23	**8**	**Break End.**
segment_num = 1	8	First Break associated with the running Program.
segments_expected = 1	8	A total of 1 Break associated with the Program is expected.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Chapter End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.

Syntax SCTE 35	Bits	Explanation
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 148539600	40	Duration of 'Program 2 – Chapter 2' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0xff4c549452db45b9a159ee53daaf9611	128	Uniquely identifies 'Program 2 – Chapter 2'.
segmentation_type_id = 0x20	**8**	**Chapter Start.**
segment_num = 2	8	Second Chapter within the Program.
segments_expected = 2	8	A total of 2 Chapters is expected within the Program.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 42	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	Not used. Duration is not specified.

Syntax SCTE 35	Bits	Explanation
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x0C	**8**	**Managed Private UPID.**
segmentation_upid_length = 27	8	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	32	Representing the name 'TV Station'.
private_cni = 0x3199	16	Signals the CNI of the TV Station's service.
private_version = 1	8	Version of the specification.
private_file_id = '5F7368276\0'	80	Carries the File ID of 'Program 2'.
private_registry_id = 'J1B038792\0'	80	Carries the Registry ID of 'Program 2'.
segmentation_type_id = 0x01	**8**	**Content Identification.**
segment_num = 0	8	This field is set to 0 in Content Identification messages.
segments_expected = 0	8	This field is set to 0 in Content Identification messages.
}		

5.7 Start of an Advertisement replacement opportunity

The following example specifies the syntax transmitted at the end of 'Provider Advertisement 1' and the start of 'Provider Advertisement 2', which is available to be replaced. This is indicated by the start of 'Distributor Placement Opportunity 1'.



5.7.1 Message composition SCTE 104

Syntax SCTE 104	Bytes	Explanation
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Provider Advertisement Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0xfc812bebd38a4b009f768244e9630f02	16	Uniquely identifies 'Provider Advertisement 1'.
segmentation_type_id = 0x31	**1**	**Provider Advertisement End.**
segment_num = 1	1	First Provider Advertisement within the Break.
segments_expected = 3	1	A total of 3 Provider Advertisements is expected within the Break.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.

Syntax SCTE 104	Bytes	Explanation
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Distributor Placement Opportunity End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 45	2	Duration of the Distributor Placement Opportunity in seconds. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x3a9cfe8763be49eeac9b3ad59d9f4b37	16	Uniquely identifies 'Distributor Placement Opportunity 1'.
segmentation_type_id = 0x36	**1**	**Distributor Placement Opportunity Start.**
segment_num = 1	1	First Break associated with the running Program.
segments_expected = 1	1	A total of 1 Break associated with the Program is expected.
duration_extension_frames = 22	1	The total length of the Placement is duration in seconds plus duration_extension_frames.

Syntax SCTE 104	Bytes	Explanation
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 1	1	The descriptor contains sub-segment numbering.
sub_segment_num = 2	1	Second Placement Opportunity within the Break.
sub_segments_expected = 2	1	A total of 2 Placement Opportunities is expected within the Break.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Provider Advertisement End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 45	2	Duration of 'Provider Advertisement 2' in seconds. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0xd1104bfdde8a4f3bb78aa0f88a5063b1	16	Uniquely identifies 'Provider Advertisement 2'.
segmentation_type_id = 0x30	**1**	**Provider Advertisement Start.**
segment_num = 2	1	Second Provider Advertisement within the Break.
segments_expected = 3	1	A total of 3 Provider Advertisement is expected within the Break.

Syntax SCTE 104	Bytes	Explanation
duration_extension_frames = 22	1	The total length of the Advertisement is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in Content Identification messages.
segmentation_upid_type = 0x0C	**1**	**Managed Private UPID.**
segmentation_upid_length = 27	1	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	4	Representing the name 'TV Station'.
private_cni = 0x3199	2	Signals the CNI of the TV Station's service.
private_version = 1	1	Version of the specification.
private_file_id = '5F7368276\0'	10	Carries the File ID of 'Program 2'.
private_registry_id = 'J1B038792\0'	10	Carries the Registry ID of 'Program 2'.
segmentation_type_id = 0x01	**1**	**Content Identification.**

Syntax SCTE 104	Bytes	Explanation
segment_num = 0	1	This field is set to 0 in Content Identification messages.
segments_expected = 0	1	This field is set to 0 in Content Identification messages.
duration_extension_frames = 0	1	This field is set to 0 in Content Identification messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		

5.7.2 Message composition SCTE 35

Syntax SCTE 35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Provider Advertisement Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.

Syntax SCTE 35	Bits	Explanation
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0xfc812bebd38a4b009f768244e9630f02	128	Uniquely identifies 'Provider Advertisement 1'.
segmentation_type_id = 0x31	**8**	**Provider Advertisement End.**
segment_num = 1	8	First Provider Advertisement within the Break.
segments_expected = 3	8	A total of 3 Provider Advertisements is expected within the Break.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 38	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Distributor Placement Opportunity End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.

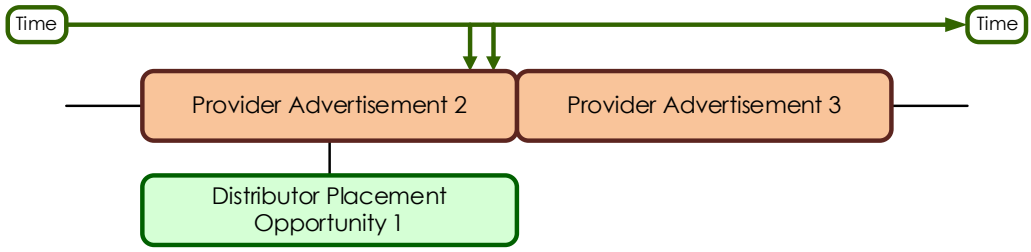
Syntax SCTE 35	Bits	Explanation
reserved	5	Fills up the remaining byte.
segmentation_duration = 4129200	40	Duration of 'Distributor Placement Opportunity 1' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x3a9cfe8763be49eeac9b3ad59d9f4b37	128	Uniquely identifies 'Distributor Placement Opportunity 1'.
segmentation_type_id = 0x36	**8**	**Distributor Placement Opportunity Start.**
segment_num = 1	8	First Break associated with the running Program.
segments_expected = 1	8	A total of 1 Break associated with the Program is expected.
sub_segment_num = 2	8	Second Placement Opportunity within the Break.
sub_segments_expected = 2	8	A total of 2 Placement Opportunities is expected within the Break.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Provider Advertisement End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.

Syntax SCTE 35	Bits	Explanation
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 4129200	40	Duration of 'Provider Advertisement 2' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0xd1104bfdde8a4f3bb78aa0f88a5063b1	128	Uniquely identifies 'Provider Advertisement 2'.
segmentation_type_id = 0x30	**8**	**Provider Advertisement Start.**
segment_num = 2	8	Second Provider Advertisement within the Break.
segments_expected = 3	8	A total of 3 Provider Advertisements is expected within the Break.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 42	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	Not used. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.

Syntax SCTE 35	Bits	Explanation
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x0C	**8**	**Managed Private UPID.**
segmentation_upid_length = 27	8	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	32	Representing the name 'TV Station'.
private_cni = 0x3199	16	Signals the CNI of the TV Station's service.
private_version = 1	8	Version of the specification.
private_file_id = '5F7368276\0'	80	Carries the File ID of 'Program 2'.
private_registry_id = 'J1B038792\0'	80	Carries the Registry ID of 'Program 2'.
segmentation_type_id = 0x01	**8**	**Content Identification.**
segment_num = 0	8	This field is set to 0 in Content Identification messages.
segments_expected = 0	8	This field is set to 0 in Content Identification messages.
}		

5.8 End of an Advertisement replacement opportunity

The following example specifies the syntax transmitted at the end of 'Provider Advertisement 2', which was available to be replaced. This is indicated by the end of 'Distributor Placement Opportunity 1'. The message also signals the start of 'Provider Advertisement 3'.



5.8.1 Message composition SCTE 104

Syntax SCTE 104	Bytes	Explanation
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Provider Advertisement Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0xd1104bfdde8a4f3bb78aa0f88a5063b1	16	Uniquely identifies 'Provider Advertisement 2'.
segmentation_type_id = 0x31	**1**	**Provider Advertisement End.**
segment_num = 2	1	Second Provider Advertisement within the Break.
segments_expected = 3	1	A total of 3 Provider Advertisements is expected within the Break.
duration_extension_frames = 0	1	This field is set to 0 in End messages.

Syntax SCTE 104	Bytes	Explanation
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Distributor Placement Opportunity Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x3a9cfe8763be49eeac9b3ad59d9f4b37	16	Uniquely identifies 'Distributor Placement Opportunity 1'.
segmentation_type_id = 0x37	**1**	**Distributor Placement Opportunity End.**
segment_num = 1	1	This field is set to 1 in Placement Opportunity End messages.
segments_expected = 1	1	This field is set to 1 in Placement Opportunity End messages.
duration_extension_frames = 0	1	This field is set to 0 in End messages.

Syntax SCTE 104	Bytes	Explanation
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Provider Advertisement End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 39	2	Duration of 'Provider Advertisement 3' in seconds. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x7ce2b819edbc43fab26d0d7ea80fa25b	16	Uniquely identifies 'Provider Advertisement 3'.
segmentation_type_id = 0x30	**1**	**Provider Advertisement Start.**
segment_num = 3	1	Third Provider Advertisement within the Break.
segments_expected = 3	1	A total of 3 Provider Advertisements is expected within the Break.

Syntax SCTE 104	Bytes	Explanation
duration_extension_frames = 8	1	The total length of the Advertisement is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in Content Identification messages.
segmentation_upid_type = 0x0C	**1**	**Managed Private UPID.**
segmentation_upid_length = 27	1	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	4	Representing the name 'TV Station'.
private_cni = 0x3199	2	Signals the CNI of the TV Station's service.
private_version = 1	1	Version of the specification.
private_file_id = '5F7368276\0'	10	Carries the File ID of 'Program 2'.
private_registry_id = 'J1B038792\0'	10	Carries the Registry ID of 'Program 2'.
segmentation_type_id = 0x01	**1**	**Content Identification.**

Syntax SCTE 104	Bytes	Explanation
segment_num = 0	1	This field is set to 0 in Content Identification messages.
segments_expected = 0	1	This field is set to 0 in Content Identification messages.
duration_extension_frames = 0	1	This field is set to 0 in Content Identification messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		

5.8.2 Message composition SCTE 35

Syntax SCTE 35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Provider Advertisement Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.

Syntax SCTE 35	Bits	Explanation
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0xd1104bfdde8a4f3bb78aa0f88a5063b1	128	Uniquely identifies 'Provider Advertisement 2'.
segmentation_type_id = 0x31	**8**	**Provider Advertisement End.**
segment_num = 2	8	Second Provider Advertisement within the Break.
segments_expected = 3	8	A total of 3 Provider Advertisements is expected within the Break.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Distributor Placement Opportunity Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.

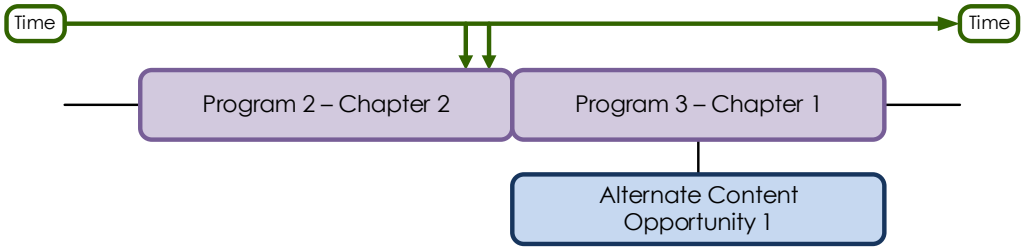
Syntax SCTE 35	Bits	Explanation
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x3a9cfe8763be49eeac9b3ad59d9f4b37	128	Uniquely identifies 'Distributor Placement Opportunity 1'.
segmentation_type_id = 0x37	**8**	**Distributor Placement Opportunity End.**
segment_num = 1	8	This field is set to 1 in Placement Opportunity End messages.
segments_expected = 1	8	This field is set to 1 in Placement Opportunity End messages.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Provider Advertisement End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.

Syntax SCTE 35	Bits	Explanation
segmentation_duration = 3510000	40	Duration of 'Provider Advertisement 3' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x7ce2b819edbc43fab26d0d7ea80fa25b	128	Uniquely identifies 'Provider Advertisement 3'.
segmentation_type_id = 0x30	**8**	**Provider Advertisement Start.**
segment_num = 3	8	Third Provider Advertisement within the Break.
segments_expected = 3	8	A total of 3 Provider Advertisements is expected within the Break.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 42	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	Not used. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x0C	**8**	**Managed Private UPID.**
segmentation_upid_length = 27	8	Total length in bytes of the private descriptors.

Syntax SCTE 35	Bits	Explanation
format_identifier = 'TVST'	32	Representing the name 'TV Station'.
private_cni = 0x3199	16	Signals the CNI of the TV Station's service.
private_version = 1	8	Version of the specification.
private_file_id = '5F7368276\0'	80	Carries the File ID of 'Program 2'.
private_registry_id = 'J1B038792\0'	80	Carries the Registry ID of 'Program 2'.
segmentation_type_id = 0x01	**8**	**Content Identification.**
segment_num = 0	8	This field is set to 0 in Content Identification messages.
segments_expected = 0	8	This field is set to 0 in Content Identification messages.
}		

5.9 Start of a Program-based replacement opportunity

The following example specifies the syntax transmitted at the end of 'Program 2 – Chapter 2' and the start of 'Program 3 – Chapter 1', which is available to be replaced. This is indicated by the start of 'Alternate Content Opportunity 1'.



5.9.1 Message composition SCTE 104

Syntax SCTE 104	Bytes	Explanation
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Chapter Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0xff4c549452db45b9a159ee53daaf9611	16	Uniquely identifies 'Program 2 – Chapter 2'.
segmentation_type_id = 0x21	**1**	**Chapter End.**
segment_num = 2	1	Second Chapter within the Program.
segments_expected = 2	1	A total of 2 Chapters is expected within the Program.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.

Syntax SCTE 104	Bytes	Explanation
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Program Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x477e6c095dff4cdeba5afdec5d9b35a9	16	Uniquely identifies 'Program 2'.
segmentation_type_id = 0x11	**1**	**Program End.**
segment_num = 1	1	This field is set to 1 in Program messages.
segments_expected = 1	1	This field is set to 1 in Program messages.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.

Syntax SCTE 104	Bytes	Explanation
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Program End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 3430	2	Duration of 'Program 3' in seconds, including assigned Breaks. This field shall be 0 if the expected duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x50988f8f48d4411bb26b12c323c1077d	16	Uniquely identifies 'Program 3'.
segmentation_type_id = 0x10	**1**	**Program Start.**
segment_num = 1	1	This field is set to 1 in Program messages.
segments_expected = 1	1	This field is set to 1 in Program messages.
duration_extension_frames = 6	1	The total length of the Program is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.

Syntax SCTE 104	Bytes	Explanation
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Alternate Content Opportunity End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 3430	2	Duration of the Alternate Content Opportunity in seconds. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0xdae24836ce2f471293c58d9e5564edbb	16	Uniquely identifies 'Alternate Content Opportunity 1'.
segmentation_type_id = 0x42	**1**	**Alternate Content Opportunity Start.**
segment_num = 1	1	First Alternate Content Opportunity within the running Program.
segments_expected = 1	1	A total of 1 Alternate Content Opportunities is expected within the Program.
duration_extension_frames = 6	1	The total length of the Alternate Content Opportunity is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.

Syntax SCTE 104	Bytes	Explanation
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Chapter End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 3430	2	Duration of 'Program 3 – Chapter 1' in seconds. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x50988f8f48d4411bb26b12c323c1077d	16	Uniquely identifies 'Program 3 – Chapter 1'.
segmentation_type_id = 0x20	**1**	**Chapter Start.**
segment_num = 1	1	First Chapter within the Program.
segments_expected = 1	1	A total of 1 Chapter is expected within the Program.
duration_extension_frames = 6	1	The total length of the Chapter is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.

Syntax SCTE 104	Bytes	Explanation
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in Content Identification messages.
segmentation_upid_type = 0x0C	**1**	**Managed Private UPID.**
segmentation_upid_length = 27	1	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	4	Representing the name 'TV Station'.
private_cni = 0x3199	2	Signals the CNI of the TV Station's service.
private_version = 1	1	Version of the specification.
private_file_id = '5C3448751\0'	10	Carries the File ID of 'Program 3'.
private_registry_id = 'J1M015239\0'	10	Carries the Registry ID of 'Program 3'.
segmentation_type_id = 0x01	**1**	**Content Identification.**
segment_num = 0	1	This field is set to 0 in Content Identification messages.
segments_expected = 0	1	This field is set to 0 in Content Identification messages.
duration_extension_frames = 0	1	This field is set to 0 in Content Identification messages.

Syntax SCTE 104	Bytes	Explanation
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		

5.9.2 Message composition SCTE 35

Syntax SCTE 35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Chapter Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.

Syntax SCTE 35	Bits	Explanation
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0xff4c549452db45b9a159ee53daaf9611	128	Uniquely identifies 'Program 2 – Chapter 2'.
segmentation_type_id = 0x21	**8**	**Chapter End.**
segment_num = 2	8	Second Chapter within the Program.
segments_expected = 2	8	A total of 2 Chapters is expected within the Program.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Program Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x477e6c095dff4cdeba5afdec5d9b35a9	128	Uniquely identifies 'Program 2'.

Syntax SCTE 35	Bits	Explanation
segmentation_type_id = 0x11	**8**	**Program End.**
segment_num = 1	8	This field is set to 1 in Program messages.
segments_expected = 1	8	This field is set to 1 in Program messages.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Program End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 308721600	40	Duration of 'Program 3' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x50988f8f48d4411bb26b12c323c1077d	128	Uniquely identifies 'Program 3'.
segmentation_type_id = 0x10	**8**	**Program Start.**
segment_num = 1	8	This field is set to 1 in Program messages.

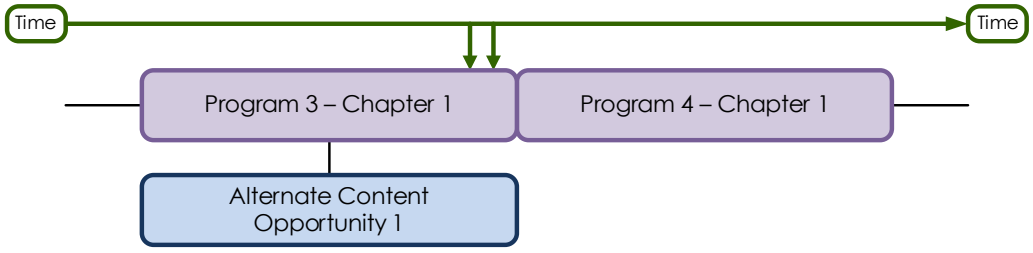
Syntax SCTE 35	Bits	Explanation
segments_expected = 1	8	This field is set to 1 in Program messages.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Alternate Content Opportunity End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 308721600	40	Duration of 'Alternate Content Opportunity 1' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0xdae24836ce2f471293c58d9e5564edbb	128	Uniquely identifies 'Alternate Content Opportunity 1'.
segmentation_type_id = 0x42	**8**	**Alternate Content Opportunity Start.**
segment_num = 1	8	First Alternate Content Opportunity within the running Program.

Syntax SCTE 35	Bits	Explanation
segments_expected = 1	8	A total of 1 Alternate Content Opportunities is expected within the Program.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Chapter End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 308721600	40	Duration of 'Program 3 – Chapter 1' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x50988f8f48d4411bb26b12c323c1077d	128	Uniquely identifies 'Program 3 – Chapter 1'.
segmentation_type_id = 0x20	**8**	**Chapter Start.**
segment_num = 1	8	First Chapter within the Program.
segments_expected = 1	8	A total of 1 Chapter is expected within the Program.
}		

Syntax SCTE 35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 42	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	Not used. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x0C	**8**	**Managed Private UPID.**
segmentation_upid_length = 27	8	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	32	Representing the name 'TV Station'.
private_cni = 0x3199	16	Signals the CNI of the TV Station's service.
private_version = 1	8	Version of the specification.
private_file_id = '5C3448751\0'	80	Carries the File ID of 'Program 3'.
private_registry_id = 'J1B038792\0'	80	Carries the Registry ID of 'Program 3'.
segmentation_type_id = 0x01	**8**	**Content Identification.**
segment_num = 0	8	This field is set to 0 in Content Identification messages.
segments_expected = 0	8	This field is set to 0 in Content Identification messages.
}		

5.10 End of a Program-based replacement opportunity

The following example specifies the syntax transmitted at the end of 'Program 3 – Chapter 1', which was available to be replaced. This is indicated by the end of 'Alternate Content Opportunity 1'. The message also signals the start of 'Program 4 – Chapter 1'.



5.10.1 Message composition SCTE 104

Syntax SCTE 104	Bytes	Explanation
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Chapter Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x50988f8f48d4411bb26b12c323c1077d	16	Uniquely identifies 'Program 3 – Chapter 1'.
segmentation_type_id = 0x21	**1**	**Chapter End.**
segment_num = 1	1	First Chapter within the Program.
segments_expected = 1	1	A total of 1 Chapter is expected within the Program.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.

Syntax SCTE 104	Bytes	Explanation
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Alternate Content Opportunity Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0xdae24836ce2f471293c58d9e5564edbb	16	Uniquely identifies 'Alternate Content Opportunity 1'.
segmentation_type_id = 0x43	**1**	**Alternate Content Opportunity End.**
segment_num = 1	1	First Alternate Content Opportunity within the running Program.
segments_expected = 1	1	A total of 1 Alternate Content Opportunities is expected within the Program.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.

Syntax SCTE 104	Bytes	Explanation
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Program Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x50988f8f48d4411bb26b12c323c1077d	16	Uniquely identifies 'Program 3'.
segmentation_type_id = 0x11	**1**	**Program End.**
segment_num = 1	1	This field is set to 1 in Program messages.
segments_expected = 1	1	This field is set to 1 in Program messages.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.

Syntax SCTE 104	Bytes	Explanation
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Program End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 1740	2	Duration of 'Program 4' in seconds, including assigned Breaks. This field shall be 0 if the expected duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x78e874efb70a4c7d9b75c34c148c9f2a	16	Uniquely identifies 'Program 4'.
segmentation_type_id = 0x10	**1**	**Program Start.**
segment_num = 1	1	This field is set to 1 in Program messages.
segments_expected = 1	1	This field is set to 1 in Program messages.
duration_extension_frames = 18	1	The total length of the Program is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.

Syntax SCTE 104	Bytes	Explanation
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Chapter End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 840	2	Duration of 'Program 4 – Chapter 1' in seconds. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x78e874efb70a4c7d9b75c34c148c9f2a	16	Uniquely identifies 'Program 4 – Chapter 1'.
segmentation_type_id = 0x20	**1**	**Chapter Start.**
segment_num = 1	1	First Chapter within the Program.
segments_expected = 2	1	A total of 2 Chapters is expected within the Program.
duration_extension_frames = 7	1	The total length of the Chapter is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.

Syntax SCTE 104	Bytes	Explanation
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in Content Identification messages.
segmentation_upid_type = 0x0C	**1**	**Managed Private UPID.**
segmentation_upid_length = 27	1	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	4	Representing the name 'TV Station'.
private_cni = 0x3199	2	Signals the CNI of the TV Station's service.
private_version = 1	1	Version of the specification.
private_file_id = '5C3448751\0'	10	Carries the File ID of 'Program 4'.
private_registry_id = 'J1M015239\0'	10	Carries the Registry ID of 'Program 4'.
segmentation_type_id = 0x01	**1**	**Content Identification.**
segment_num = 0	1	This field is set to 0 in Content Identification messages.
segments_expected = 0	1	This field is set to 0 in Content Identification messages.
duration_extension_frames = 0	1	This field is set to 0 in Content Identification messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.

Syntax SCTE 104	Bytes	Explanation
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		

5.10.2 Message composition SCTE 35

Syntax SCTE 35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Chapter Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x50988f8f48d4411bb26b12c323c1077d	128	Uniquely identifies 'Program 3 – Chapter 1'.

Syntax SCTE 35	Bits	Explanation
segmentation_type_id = 0x21	**8**	**Chapter End.**
segment_num = 1	8	First Chapter within the Program.
segments_expected = 1	8	A total of 1 Chapter is expected within the Program.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Alternate Content Opportunity Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0xdae24836ce2f471293c58d9e5564edbb	128	Uniquely identifies 'Alternate Content Opportunity 1'.
segmentation_type_id = 0x43	**8**	**Alternate Content Opportunity End.**
segment_num = 1	8	First Alternate Content Opportunity within the running Program.

Syntax SCTE 35	Bits	Explanation
segments_expected = 1	8	A total of 1 Alternate Content Opportunities is expected within the Program.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Program Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x50988f8f48d4411bb26b12c323c1077d	128	Uniquely identifies 'Program 3'.
segmentation_type_id = 0x11	**8**	**Program End.**
segment_num = 1	8	This field is set to 1 in Program messages.
segments_expected = 1	8	This field is set to 1 in Program messages.
}		

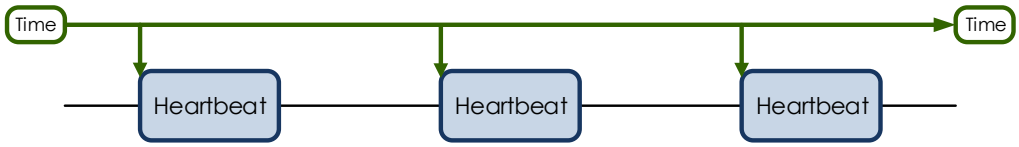
Syntax SCTE 35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Program End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 156664800	40	Duration of 'Program 4' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x50988f8f48d4411bb26b12c323c1077d	128	Uniquely identifies 'Program 4'.
segmentation_type_id = 0x10	**8**	**Program Start.**
segment_num = 1	8	This field is set to 1 in Program messages.
segments_expected = 1	8	This field is set to 1 in Program messages.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.

Syntax SCTE 35	Bits	Explanation
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Chapter End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 75625200	40	Duration of 'Program 4 – Chapter 1' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x78e874efb70a4c7d9b75c34c148c9f2a	128	Uniquely identifies 'Program 4 – Chapter 1'.
segmentation_type_id = 0x20	**8**	**Chapter Start.**
segment_num = 1	8	First Chapter within the Program.
segments_expected = 2	8	A total of 2 Chapters is expected within the Program.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 42	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier.

Syntax SCTE 35	Bits	Explanation
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	Not used. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x0C	**8**	**Managed Private UPID.**
segmentation_upid_length = 27	8	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	32	Representing the name 'TV Station'.
private_cni = 0x3199	16	Signals the CNI of the TV Station's service.
private_version = 1	8	Version of the specification.
private_file_id = '5C3448751\0'	80	Carries the File ID of 'Program 4'.
private_registry_id = 'J1M015239\0'	80	Carries the Registry ID of 'Program 4'.
segmentation_type_id = 0x01	**8**	**Content Identification.**
segment_num = 0	8	This field is set to 0 in Content Identification messages.
segments_expected = 0	8	This field is set to 0 in Content Identification messages.
}		

5.11 Heartbeat

The following example specifies the syntax transmitted as a periodic Heartbeat. The identification in the message corresponds to the running Program.



5.11.1 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 = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in Content Identification messages.
segmentation_upid_type = 0x0C	**1**	**Managed Private UPID.**
segmentation_upid_length = 27	1	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	4	Representing the name 'TV Station'.
private_cni = 0x3199	2	Signals the CNI of the TV Station's service.
private_version = 1	1	Version of the specification.
private_file_id = '305723H1\0'	10	Carries the File ID of 'Program 2'.
private_registry_id = '277319\0'	10	Carries the Registry ID of 'Program 2'.
segmentation_type_id = 0x01	**1**	**Content Identification.**
segment_num = 0	1	This field is set to 0 in Content Identification messages.
segments_expected = 0	1	This field is set to 0 in Content Identification messages.
duration_extension_frames = 0	1	This field is set to 0 in Content Identification messages.

Syntax SCTE 104	Bytes	Explanation
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		

5.11.2 Message composition SCTE 35

Syntax SCTE 35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 42	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	Not used. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x0C	**8**	**Managed Private UPID.**

Syntax SCTE 35	Bits	Explanation
segmentation_upid_length = 27	8	Total length in bytes of the private descriptors.
format_identifier = 'TVST'	32	Representing the name 'TV Station'.
private_cni = 0x3199	16	Signals the CNI of the TV Station's service.
private_version = 1	8	Version of the specification.
private_file_id = '305723H1\0'	80	Carries the File ID of 'Program 2'.
private_registry_id = '277319\0'	80	Carries the Registry ID of 'Program 2'.
segmentation_type_id = 0x01	**8**	**Content Identification.**
segment_num = 0	8	This field is set to 0 in Content Identification messages.
segments_expected = 0	8	This field is set to 0 in Content Identification messages.
}		

6 Operator specific identifiers

6.1 Introduction

This section specifies alternative UPID and/or additional Program identification for each participating operator, if relevant. The organisations are registered in alphabetic order. An imaginary Program transition sequence similar to the content of section 5.4 is displayed that – if all are supported by the operator – consists of a Chapter End, a Program End, a Program Start, a Chapter Start and a Content Identification segmentation descriptor. Other start and end signalling is performed in a similar manner. For compliancy reason, the AiringID in Section 6.4 is expressed as hexadecimal, with its numeric value displayed between brackets.

6.2 NPO

6.2.1 UPID

The UPID corresponds to the following identifier:

segmentation_upid_type	Universally Unique Identifier

The mapping from automation systems of the operator is specified as follows:

Programs	WHATS'ON UUID
Chapters	To be defined
Provider Promos	WHATS'ON UUID
Provider Advertisements	WHATS'ON UUID
Breaks	To be defined
Provider Placement Opportunities	Placement ID
Distributor Placement Opportunities	Placement ID
Network Start/End	Not available

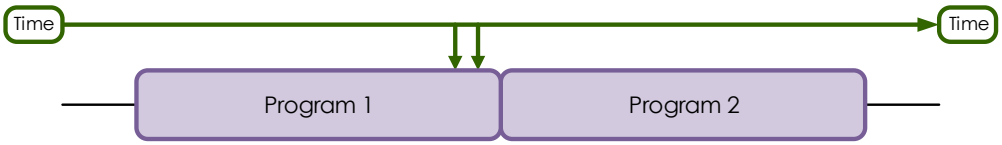
6.2.2 Additional Program identifiers

The following additional Program identifier are included in Content Identification:

Global Unique Clip Identifier (GUCI)	A 25 character long alphanumeric string private_guci which is NPO's unique video asset identifier. This identifier remains with the asset over time, independent of the scheduled time(s) of broadcast.
Product ID	A 25 character long alphanumeric string private_product_id that refers to the NPO unique identifier of the product/program, used for EPG and video-on-demand identification.

6.2.3 Program transition

The following example specifies the syntax transmitted at the end of 'Program 1' and the start of 'Program 2'.



6.2.3.1 Message composition SCTE 104

Syntax SCTE 104	Bytes	Explanation
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Program Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0xd7b6360232ef406b93b2583f667f1f58	16	Uniquely identifies 'Program 1'.
segmentation_type_id = 0x11	**1**	**Program End.**
segment_num = 1	1	This field is set to 1 in Program messages.
segments_expected = 1	1	This field is set to 1 in Program messages.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.

Syntax SCTE 104	Bytes	Explanation
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Program End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 1231	2	Duration of 'Program 2' in seconds, including assigned Breaks. This field shall be 0 if the expected duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x477e6c095dff4cdeba5afdec5d9b35a9	16	Uniquely identifies 'Program 2'.
segmentation_type_id = 0x10	**1**	**Program Start.**
segment_num = 1	1	This field is set to 1 in Program messages.
segments_expected = 1	1	This field is set to 1 in Program messages.
duration_extension_frames = 2	1	The total length of the Program is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.

Syntax SCTE 104	Bytes	Explanation
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in Content Identification messages.
segmentation_upid_type = 0x0C	**1**	**Managed Private UPID.**
segmentation_upid_length = 57	1	Total length in bytes of the private descriptors.
format_identifier = 'NPO1'	4	Representing the name 'Nederlandse Publieke Omroep'.
private_cni = 0x31XX	2	Signals the CNI of the NPO service.
private_version = 1	1	Version of the specification.
private_guci = 'NOS_JOURNAAL1-WON03649141\0'	25	A 25 character long alphanumeric string private_guci which is the NPO identifier of a unique slot within the schedule for a specific event.
private_product_id = 'VPWON_1267662\0'	25	A 25 character long alphanumeric string private_product_id that refers to the NPO unique identifier of the product, used for EPG and video-on-demand.
segmentation_type_id = 0x01	**1**	**Content Identification.**
segment_num = 0	1	This field is set to 0 in Content Identification messages.

Syntax SCTE 104	Bytes	Explanation
segments_expected = 0	1	This field is set to 0 in Content Identification messages.
duration_extension_frames = 0	1	This field is set to 0 in Content Identification messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		

6.2.3.2 Message composition SCTE 35

Syntax SCTE 35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Program Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.

Syntax SCTE 35	Bits	Explanation
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0xd7b6360232ef406b93b2583f667f1f58	128	Uniquely identifies 'Program 1'.
segmentation_type_id = 0x11	**8**	**Program End.**
segment_num = 1	8	This field is set to 1 in Program messages.
segments_expected = 1	8	This field is set to 1 in Program messages.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Program End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.

Syntax SCTE 35	Bits	Explanation
segmentation_duration = 110797200	40	Duration of 'Program 2' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x477e6c095dff4cdeba5afdec5d9b35a9	128	Uniquely identifies 'Program 2'.
segmentation_type_id = 0x10	**8**	**Program Start.**
segment_num = 1	8	This field is set to 1 in Program messages.
segments_expected = 1	8	This field is set to 1 in Program messages.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 72	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	Not used. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x0C	**8**	**Managed Private UPID.**
segmentation_upid_length = 57	8	Total length in bytes of the private descriptors.

Syntax SCTE 35	Bits	Explanation
format_identifier = 'NPO1'	32	Representing the name 'Nederlandse Publieke Omroep'.
private_cni = 0x31XX	16	Signals the CNI of the NPO service.
private_version = 1	8	Version of the specification.
private_guci = 'NOS_JOURNAAL1-WON03649141\0'	200	A 25 character long alphanumeric string private_guci which is the NPO identifier of a unique slot within the schedule for a specific event.
private_product_id = 'VPWON_1267662\0'	200	A 25 character long alphanumeric string private_product_id that refers to the NPO unique identifier of the product, used for EPG and video-on-demand.
segmentation_type_id = 0x01	**8**	**Content Identification.**
segment_num = 0	8	This field is set to 0 in Content Identification messages.
segments_expected = 0	8	This field is set to 0 in Content Identification messages.
}		

6.3 RTL Netherlands

6.3.1 UPID

The UPID corresponds to the following identifier:

segmentation_upid_type	Universally Unique Identifier

The mapping from automation systems of the operator is specified as follows:

Programs	Event ID
Chapters	Event ID
Provider Promos	Not supported
Provider Advertisements	Event ID
Breaks	Break ID
Provider Placement Opportunities	Placement ID
Distributor Placement Opportunities	Placement ID
Network Start/End	Network Start/End ID

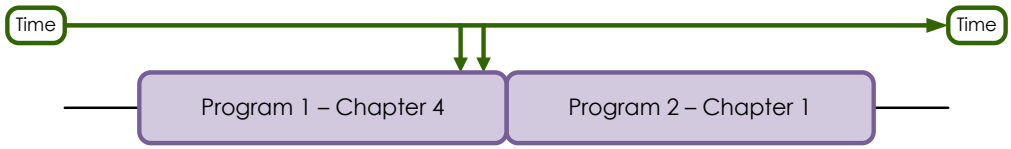
6.3.2 Additional Program identifiers

The following additional identifiers are included in Content Identification:

Material ID	An 11 character long alphanumeric string that refers to the RTL File/Tape ID of the running Program.
Library key	A 9 character long alphanumeric string that points to the RTL Rights ID of the running Program.

6.3.3 Program transition

The following example specifies the syntax transmitted at the end of 'Program 1 – Chapter 4' and the start of 'Program 2 – Chapter 1'.



6.3.3.1 Message composition SCTE 104

Syntax SCTE 104	Bytes	Explanation
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Chapter Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x077977a1b6354d34b6cc32676fa1694f	16	Uniquely identifies 'Program 1 – Chapter 4'.
segmentation_type_id = 0x21	**1**	**Chapter End.**
segment_num = 4	1	Fourth Chapter within the Program.
segments_expected = 4	1	A total of 4 Chapters is expected within the Program.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.

Syntax SCTE 104	Bytes	Explanation
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Program Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0xd7b6360232ef406b93b2583f667f1f58	16	Uniquely identifies 'Program 1'.
segmentation_type_id = 0x11	**1**	**Program End.**
segment_num = 1	1	This field is set to 1 in Program messages.
segments_expected = 1	1	This field is set to 1 in Program messages.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.

Syntax SCTE 104	Bytes	Explanation
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Program End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 1231	2	Duration of 'Program 2' in seconds, including assigned Breaks. This field shall be 0 if the expected duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x477e6c095dff4cdeba5afdec5d9b35a9	16	Uniquely identifies 'Program 2'.
segmentation_type_id = 0x10	**1**	**Program Start.**
segment_num = 1	1	This field is set to 1 in Program messages.
segments_expected = 1	1	This field is set to 1 in Program messages.
duration_extension_frames = 2	1	The total length of the Program is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.

Syntax SCTE 104	Bytes	Explanation
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Chapter End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 89	2	Duration of 'Program 2 – Chapter 1' in seconds. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**1**	**Universally Unique Identifier.**
segmentation_upid_length = 16	1	Length of the UPID in bytes.
segmentation_upid = 0x477e6c095dff4cdeba5afdec5d9b35a9	16	Uniquely identifies 'Program 2 – Chapter 1'.
segmentation_type_id = 0x20	**1**	**Chapter Start.**
segment_num = 1	1	First Chapter within the Program.
segments_expected = 2	1	A total of 2 Chapters is expected within the Program.
duration_extension_frames = 18	1	The total length of the Chapter is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.

Syntax SCTE 104	Bytes	Explanation
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in Content Identification messages.
segmentation_upid_type = 0x0C	**1**	**Managed Private UPID.**
segmentation_upid_length = 27	1	Total length in bytes of the private descriptors.
format_identifier = 'RTLN'	4	Representing the name 'RTL Netherlands'.
private_cni = 0x31XX	2	Signals the CNI of the RTL service.
private_version = 1	1	Version of the specification.
private_material_id = '305723H1\0'	11	An 11 character long alphanumeric string that refers to the RTL File/Tape ID of the running Program.
private_library_key = '277319\0'	9	A 9 character long alphanumeric string that points to the RTL Rights ID of the running Program.
segmentation_type_id = 0x01	**1**	**Content Identification.**
segment_num = 0	1	This field is set to 0 in Content Identification messages.
segments_expected = 0	1	This field is set to 0 in Content Identification messages.
duration_extension_frames = 0	1	This field is set to 0 in Content Identification messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.

Syntax SCTE 104	Bytes	Explanation
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		

6.3.3.2 Message composition SCTE 35

Syntax SCTE 35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Chapter Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.

Syntax SCTE 35	Bits	Explanation
segmentation_upid = 0x077977a1b6354d34b6cc32676fa1694f	128	Uniquely identifies 'Program 1 – Chapter 4'.
segmentation_type_id = 0x21	**8**	**Chapter End.**
segment_num = 4	8	Fourth Chapter within the Program.
segments_expected = 4	8	A total of 4 Chapters is expected within the Program.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 31	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Program Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0xd7b6360232ef406b93b2583f667f1f58	128	Uniquely identifies 'Program 1'.
segmentation_type_id = 0x11	**8**	**Program End.**

Syntax SCTE 35	Bits	Explanation
segment_num = 1	8	This field is set to 1 in Program messages.
segments_expected = 1	8	This field is set to 1 in Program messages.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Program End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 110797200	40	Duration of 'Program 2' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x477e6c095dff4cdeba5afdec5d9b35a9	128	Uniquely identifies 'Program 2'.
segmentation_type_id = 0x10	**8**	**Program Start.**
segment_num = 1	8	This field is set to 1 in Program messages.

Syntax SCTE 35	Bits	Explanation
segments_expected = 1	8	This field is set to 1 in Program messages.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 36	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Chapter End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 8074800	40	Duration of 'Program 2 – Chapter 1' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x10	**8**	**Universally Unique Identifier.**
segmentation_upid_length = 16	8	Length of the UPID in bytes.
segmentation_upid = 0x477e6c095dff4cdeba5afdec5d9b35a9	128	Uniquely identifies 'Program 2 – Chapter 1'.
segmentation_type_id = 0x20	**8**	**Chapter Start.**
segment_num = 1	8	First Chapter within the Program.
segments_expected = 2	8	A total of 2 Chapters is expected within the Program.
}		
segmentation_descriptor()		

Syntax SCTE 35	Bits	Explanation
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 42	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	Not used. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x0C	**8**	**Managed Private UPID.**
segmentation_upid_length = 27	8	Total length in bytes of the private descriptors.
format_identifier = 'RTLN'	32	Representing the name 'RTL Netherlands'.
private_cni = 0x31XX	16	Signals the CNI of the RTL service.
private_version = 1	8	Version of the specification.
private_material_id = '305723H1\0'	88	An 11 character long alphanumeric string that refers to the RTL File/Tape ID of the running Program.
private_library_key = '277319\0'	72	A 9 character long alphanumeric string that points to the RTL Rights ID of the running Program.
segmentation_type_id = 0x01	**8**	**Content Identification.**
segment_num = 0	8	This field is set to 0 in Content Identification messages.
segments_expected = 0	8	This field is set to 0 in Content Identification messages.

Syntax SCTE 35	Bits	Explanation
}		

6.4 Talpa TV Broadcasting

6.4.1 UPID

The UPID corresponds to the following identifier:

segmentation_upid_type	AiringID

The mapping from automation systems of the operator is specified as follows:

Programs	Transmission ID
Chapters	Chapter ID
Provider Promos	Not supported
Provider Advertisements	Interstitial ID
Breaks	Break ID
Provider Placement Opportunities	Placement ID
Distributor Placement Opportunities	Placement ID
Network Start/End	To be defined

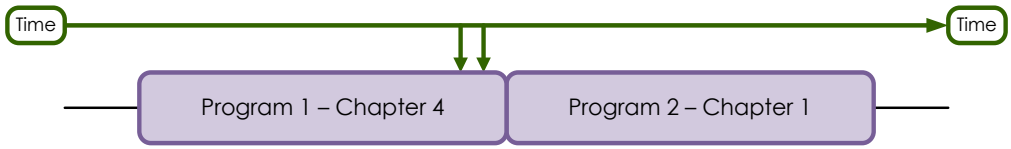
6.4.2 Additional Program identifiers

The following additional identifiers are included in Content Identification:

Transmission ID	A 64 bits unsigned numeric value which is the SBS identifier of a unique slot within the schedule for a specific Program.
Product Code	A 64 bits unsigned numeric value which is the SBS unique identifier of the Program and its episode.
Web Publication Key	A 25 character long alphanumeric string private_web_publication_key that refers to the SBS unique identifier of the product, used for web publishing and video-on-demand.

6.4.3 Program transition

The following example specifies the syntax transmitted at the end of 'Program 1 – Chapter 4' and the start of 'Program 2 – Chapter 1'.



6.4.3.1 Message composition SCTE 104

Syntax SCTE 104	Bytes	Explanation
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Chapter Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x08	**1**	**AiringID.**
segmentation_upid_length = 8	1	Length of the UPID in bytes.
segmentation_upid = 0x0000386192976fb (3874482648827)	8	Uniquely identifies 'Program 1 – Chapter 4'.
segmentation_type_id = 0x21	**1**	**Chapter End.**
segment_num = 4	1	Fourth Chapter within the Program.
segments_expected = 4	1	A total of 4 Chapters is expected within the Program.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.

Syntax SCTE 104	Bytes	Explanation
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Program Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in End messages.
segmentation_upid_type = 0x08	**1**	**AiringID.**
segmentation_upid_length = 8	1	Length of the UPID in bytes.
segmentation_upid = 0x000001bfe8c0c990 (1923755329936)	8	Uniquely identifies 'Program 1'.
segmentation_type_id = 0x11	**1**	**Program End.**
segment_num = 1	1	This field is set to 1 in Program messages.
segments_expected = 1	1	This field is set to 1 in Program messages.
duration_extension_frames = 0	1	This field is set to 0 in End messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.

Syntax SCTE 104	Bytes	Explanation
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Program End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 1231	2	Duration of 'Program 2' in seconds, including assigned Breaks. This field shall be 0 if the expected duration is not known.
segmentation_upid_type = 0x08	**1**	**AiringID.**
segmentation_upid_length = 8	1	Length of the UPID in bytes.
segmentation_upid = 0x000002747b92a2b2 (2699312669362)	8	Uniquely identifies 'Program 2'.
segmentation_type_id = 0x10	**1**	**Program Start.**
segment_num = 1	1	This field is set to 1 in Program messages.
segments_expected = 1	1	This field is set to 1 in Program messages.
duration_extension_frames = 2	1	The total length of the Program is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.

Syntax SCTE 104	Bytes	Explanation
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier. The same number is used for the related Chapter End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 89	2	Duration of 'Program 2 – Chapter 1' in seconds. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x08	**1**	**AiringID.**
segmentation_upid_length = 8	1	Length of the UPID in bytes.
segmentation_upid = 0x000002747b92a2b2 (2699312669362)	8	Uniquely identifies 'Program 2 – Chapter 1'.
segmentation_type_id = 0x20	**1**	**Chapter Start.**
segment_num = 1	1	First Chapter within the Program.
segments_expected = 2	1	A total of 2 Chapters is expected within the Program.
duration_extension_frames = 18	1	The total length of the Chapter is duration in seconds plus duration_extension_frames.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.

Syntax SCTE 104	Bytes	Explanation
sub_segments_expected = 0	1	Not used.
}		
insert_segmentation_descriptor_request_data()		
{		
segmentation_event_id	4	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
duration = 0	2	This field is set to 0 in Content Identification messages.
segmentation_upid_type = 0x0C	**1**	**Managed Private UPID.**
segmentation_upid_length = 48	1	Total length in bytes of the private descriptors.
format_identifier = 'SBSB'	4	Representing the name 'SBS Broadcasting'.
private_cni = 0x31XX	2	Signals the CNI of the SBS service.
private_version = 1	1	Version of the specification.
private_transmission_id = 2699312669362	8	A 64 bits unsigned numeric value which is the SBS identifier of a unique slot within the schedule for a specific Program.
private_product_code = 27610	8	A 64 bits unsigned numeric value which is the SBS unique identifier of the Program and its episode.
private_web_publication_key = 'Hyf3BAHsOTPn\0'	25	A 25 character long alphanumeric string private_web_publication_key which refers to the SBS unique identifier of the product, used for web publishing and video-on-demand.
segmentation_type_id = 0x01	**1**	**Content Identification.**
segment_num = 0	1	This field is set to 0 in Content Identification messages.
segments_expected = 0	1	This field is set to 0 in Content Identification messages.

Syntax SCTE 104	Bytes	Explanation
duration_extension_frames = 0	1	This field is set to 0 in Content Identification messages.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
web_delivery_allowed_flag = 1	1	Not used.
no_regional_blackout_flag = 1	1	Not used.
archive_allowed_flag = 1	1	Not used.
device_restrictions = 0	1	Not used.
insert_sub_segment_info = 0	1	The descriptor does not contain sub-segment numbering.
sub_segment_num = 0	1	Not used.
sub_segments_expected = 0	1	Not used.
}		

6.4.3.2 Message composition SCTE 35

Syntax SCTE 35	Bits	Explanation
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 23	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Chapter Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.

Syntax SCTE 35	Bits	Explanation
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x08	**8**	**AiringID.**
segmentation_upid_length = 8	8	Length of the UPID in bytes.
segmentation_upid = 0x00000386192976fb (3874482648827)	64	Uniquely identifies 'Program 1 – Chapter 4'.
segmentation_type_id = 0x21	**8**	**Chapter End.**
segment_num = 4	8	Fourth Chapter within the Program.
segments_expected = 4	8	A total of 4 Chapters is expected within the Program.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 23	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Program Start message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	This field is set to 0 in End messages. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x08	**8**	**AiringID.**
segmentation_upid_length = 8	8	Length of the UPID in bytes.

Syntax SCTE 35	Bits	Explanation
segmentation_upid = 0x000001bfe8c0c990 (1923755329936)	64	Uniquely identifies 'Program 1'.
segmentation_type_id = 0x11	**8**	**Program End.**
segment_num = 1	8	This field is set to 1 in Program messages.
segments_expected = 1	8	This field is set to 1 in Program messages.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 28	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Program End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 110797200	40	Duration of 'Program 2' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x08	**8**	**AiringID.**
segmentation_upid_length = 8	8	Length of the UPID in bytes.
segmentation_upid = 0x000002747b92a2b2 (2699312669362)	64	Uniquely identifies 'Program 2'.

Syntax SCTE 35	Bits	Explanation
segmentation_type_id = 0x10	**8**	**Program Start.**
segment_num = 1	8	This field is set to 1 in Program messages.
segments_expected = 1	8	This field is set to 1 in Program messages.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 28	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier. The same number is used for the related Chapter End message.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 1	1	Duration is specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_duration = 8074800	40	Duration of 'Program 2 – Chapter 1' in 90 kHz clock ticks. This field is set to 0 if the duration is not known.
segmentation_upid_type = 0x08	**8**	**AiringID.**
segmentation_upid_length = 8	8	Length of the UPID in bytes.
segmentation_upid = 0x000002747b92a2b2 (2699312669362)	64	Uniquely identifies 'Program 2 – Chapter 1'.
segmentation_type_id = 0x20	**8**	**Chapter Start.**
segment_num = 1	8	First Chapter within the Program.

Syntax SCTE 35	Bits	Explanation
segments_expected = 2	8	A total of 2 Chapters is expected within the Program.
}		
segmentation_descriptor()		
{		
splice_descriptor_tag = 0x02	8	Defines the body of the descriptor.
descriptor_length = 63	8	The length of the descriptor in bytes.
identifier = 'CUEI'	32	Identifies the descriptor.
segmentation_event_id	32	A unique segmentation event identifier.
segmentation_event_cancel_indicator = 0	1	No cancellation.
reserved	7	Fills up the remaining byte.
program_segmentation_flag = 1	1	All PIDs of the program are to be segmented.
segmentation_duration_flag = 0	1	Not used. Duration is not specified.
delivery_not_restricted_flag = 1	1	This field is set to 1 which means that the delivery restriction flags and field are not used.
reserved	5	Fills up the remaining byte.
segmentation_upid_type = 0x0C	**8**	**Managed Private UPID.**
segmentation_upid_length = 48	8	Total length in bytes of the private descriptors.
format_identifier = 'SBSB'	32	Representing the name 'SBS Broadcasting'.
private_cni = 0x31XX	16	Signals the CNI of the SBS service.
private_version = 1	8	Version of the specification.
private_transmission_id = 2699312669362	64	A 64 bits unsigned numeric value which is the SBS identifier of a unique slot within the schedule for a specific Program.
private_product_code = 27610	64	A 64 bits unsigned numeric value which is the SBS unique identifier of the Program and its episode.

Syntax SCTE 35	Bits	Explanation
private_web_publication_key = 'Hyf3BAHsOTPn\0'	200	A 25 character long alphanumeric string private_web_publication_key which refers to the SBS unique identifier of the product, used for web publishing and video-on-demand.
segmentation_type_id = 0x01	**8**	**Content Identification.**
segment_num = 0	8	This field is set to 0 in Content Identification messages.
segments_expected = 0	8	This field is set to 0 in Content Identification messages.
}		

7 Abbreviations

ACO	Alternate Content Opportunity
ANSI	American National Standards Institute
AS	Automation System
CNI	Country and Network Identification
DPI	Digital Program Insertion
DPO	Distributor Placement Opportunity
DVB	Digital Video Broadcasting
EBU	European Broadcasting Union
ESAM	Event Signalling and Management
ETDS	Event Triggering Distribution Specification
ETDSS	Event Triggering Distribution Specification Supplement
ETSI	European Telecommunications Standards Institute
EPG	Electronic Program Guide
GUCI	Global Unique Clip Identifier
HD	High Definition
HDSDI	High Definition Serial Digital Interface
HLS	HTTP Live Streaming
HTTP	Hypertext Transfer Protocol
ID	Identifier
IDTV	Integrated Digital (or Decoder) Television
IP	Internet Protocol
IETF	Internet Engineering Task Force
LAN	Local Area Network
MPU	Managed Private UPID
OTT	Over The Top
PID	Packet Identifier
PPO	Provider Placement Opportunity
RFC	Request for Comments
SCTE	Society of Cable Telecommunications Engineers
SD	Standard Definition
SDI	Serial Digital Interface
SMPTE	Society of Motion Picture and Television Engineers
TS	Transport Stream or Television Specification
TV	Television
TVST	Television Station
VANC	Vertical Ancillary Data

VAST	Video Ad Serving Template
UPID	Unique Program Identifier
UTC	Coordinated Universal Time
UUID	Universally Unique Identifier