

Monitoring and Troubleshooting Dynamic Ad Insertion with VideoBRIDGE

WHITE PAPER

INTRODUCTION

Despite the rise of over-the-top (OTT) streaming services, traditional linear television continues to be a widely consumed media platform. With tighter competition comes an increased focus on profitability. Ad revenue has long been the leading driver of profits for television stations and cable operators. Local Dynamic Ad Insertion (DAI), enables operators to replace certain national ads with locally targeted ads based on a geographical location.

To make local DAI work, it is essential to have a reliable monitoring solution to ensure that the DAI trigger messages are delivered correctly, that the ads are properly inserted, and to troubleshoot DAI problems. Sencore's VideoBRIDGE product line has a specific set of features that helps operators effectively and efficiently monitor local DAI on their channels. This white paper will discuss how Sencore's VideoBRIDGE helps.

WHAT IS SENCORE'S VIDEOBRIDGE PRODUCT LINE?

Sencore's VideoBRIDGE product line is a total monitoring solution for broadcast and cable operators, content providers, and streaming video providers. The VideoBRIDGE product line encompasses a broad range of products including IP probes - ranging from 1Gbps to 50Gbps, RF and ASI probes and a centralized management server for pulling it all together. The VideoBRIDGE probes can each be used on their own or with the VBC centralized management server to really enhance their power; allowing operators to monitor their video delivery network from end to end.

The VideoBRIDGE probes come standard with QoS (Quality of Service) monitoring features focused on monitoring the physical and transport layers of streams. QoE (Quality of Experience) features are able to be added, which enables deep analysis of media content like video, audio, captions and ad insertion.

USE CASES FOR MONITORING DYNAMIC AD INSERTIONS

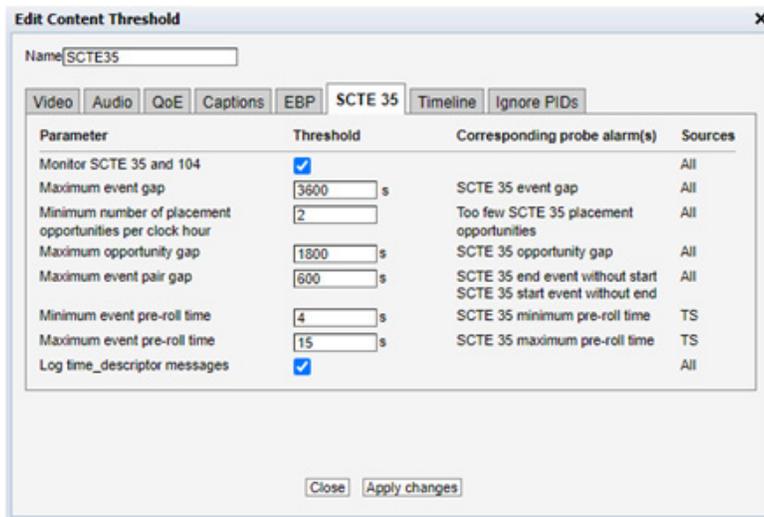
Operators that send local DAI messages (SCTE35 or SCTE104) in their network feeds and others that do the local DAI have three main use cases where they need monitoring equipment like Sencore's VideoBRIDGE product line.

BEING ALERTED TO DYNAMIC AD INSERTION SYSTEM FAILURES

Broadcast networks insert SCTE35 or SCTE104 markers into their national feeds so that local entities, such as a local cable headend or a local TV station, know where in the stream they can insert their own local ad content. These markers are pre-scheduled and must be accurately and continuously placed for the whole local DAI system to work. Network operators need ways to be automatically alerted if the ad markers fail to be inserted or sent as expected.

The DAI monitoring features in VideoBRIDGE allow these users to continually monitor all their streams and automatically alarm on missing SCTE35/104 messages. Alarms can be set up to monitor maximum time between ad insert opportunities and minimum number of ad insert opportunities per clock hour. With these alarms, broadcasters can be quickly and automatically alerted if their national feeds are leaving without the expected SCTE35/104 markers.

The VideoBRIDGE system can also alarm on additional timing issues, such as, maximum event pair gap and pre-roll. The probes can generate an alarm if an ad insertion start marker is sent, but the end marker is not sent in a timely manner. The minimum and maximum pre-roll time (pre-roll is the time difference between the arrival of the ad insertion marker and the start of the ad) can also be monitored and alerted on, to make sure downstream equipment has a proper amount of time to queue up the ad for insertion.



Parameter	Threshold	Corresponding probe alarm(s)	Sources
Monitor SCTE 35 and 104	<input checked="" type="checkbox"/>		All
Maximum event gap	3600 s	SCTE 35 event gap	All
Minimum number of placement opportunities per clock hour	2	Too few SCTE 35 placement opportunities	All
Maximum opportunity gap	1800 s	SCTE 35 opportunity gap	All
Maximum event pair gap	600 s	SCTE 35 end event without start SCTE 35 start event without end	All
Minimum event pre-roll time	4 s	SCTE 35 minimum pre-roll time	TS
Maximum event pre-roll time	15 s	SCTE 35 maximum pre-roll time	TS
Log time_descriptor messages	<input checked="" type="checkbox"/>		All

SCTE35/104 Alarm Setup

TROUBLESHOOTING DYNAMIC AD INSERTION PROBLEMS

Once broadcast networks are alerted to a problem with their SCTE35/104 ad insertion markers, it is time to figure out the cause of the problem. VideoBRIDGE has the capability to deep dive into the issues, all the way down to the message syntax, to fully understand the root causes.

Time	SD	Service name	PID	Type	Splice Comment	Cmd id	Event ID	Duration	Cut	Lines	Switch mode	Msg. type	Typeid	Duration	Trsr
Apr 28 15:15:06	1	Unknown	2000	35	Splice NULL	0x0	44466	0:00				Content identification	0x1	NA	0
Apr 28 15:14:56	1	Unknown	2000	35	Splice NULL	0x0	44466	0:00				Content identification	0x1	NA	0
Apr 28 15:14:42	1	Unknown	2000	35	Time signal	0x6	44466	-1000				Provider placement opportunity start	0x34	30:03	0
Apr 28 15:14:42	1	Unknown	2000	35	Time signal	0x6	44465	-1000				Provider placement opportunity end	0x35	NA	0
Apr 28 15:14:41	1	Unknown	2000	35	Splice NULL	0x0	44465	0:00				Content identification	0x1	NA	0
Apr 28 15:14:38	1	Unknown	2000	35	Splice insert	0x5	44294	-1000			Program Out Point	Provider placement opportunity start	0x34	15:02	0
Apr 28 15:14:27	1	Unknown	2000	35	Time signal	0x6	44465	-1000				Provider advertisement start	0x30	75:08	0
Apr 28 15:14:27	1	Unknown	2000	35	Time signal	0x6	44475	-1000				Chapter end	0x21	NA	0
Apr 28 15:14:27	1	Unknown	2000	35	Time signal	0x6	3010	-1000				Content identification	0x1	NA	0
Apr 28 15:14:26	1	Unknown	2000	35	Splice NULL	0x0	3010	0:00				Content identification	0x1	NA	0
Apr 28 15:14:16	1	Unknown	2000	35	Splice NULL	0x0	3010	0:00				Content identification	0x1	NA	0
Apr 28 15:14:06	1	Unknown	2000	35	Splice NULL	0x0	3010	0:00				Content identification	0x1	NA	0
Apr 28 15:13:56	1	Unknown	2000	35	Splice NULL	0x0	3010	0:00				Content identification	0x1	NA	0
Apr 28 15:13:46	1	Unknown	2000	35	Splice NULL	0x0	44451	0:00				Content identification	0x1	NA	0
Apr 28 15:13:42	1	Unknown	2000	35	Time signal	0x6	3010	-1000				Chapter start	0x20	45:05	0
Apr 28 15:13:42	1	Unknown	2000	35	Time signal	0x6	44450	-1000				Provider advertisement end	0x31	NA	0
Apr 28 15:13:42	1	Unknown	2000	35	Time signal	0x6	44451	-1000				Provider placement opportunity end	0x35	NA	0
Apr 28 15:13:36	1	Unknown	2000	35	Splice NULL	0x0	44451	0:00				Content identification	0x1	NA	0
Apr 28 15:13:26	1	Unknown	2000	35	Splice NULL	0x0	44451	0:00				Content identification	0x1	NA	0
Apr 28 15:13:16	1	Unknown	2000	35	Splice NULL	0x0	44450	0:00				Content identification	0x1	NA	0
Apr 28 15:13:12	1	Unknown	2000	35	Time signal	0x6	44451	-1000				Provider placement opportunity start	0x34	30:03	0
Apr 28 15:13:12	1	Unknown	2000	35	Time signal	0x6	44450	-1000				Provider placement opportunity end	0x35	NA	0
Apr 28 15:13:04	1	Unknown	2000	34	Online Ad III	0x6	44465	0:00				Content identification	0x1	NA	0

Logged SCTE35/104 Messages

```

    splice_time
    - time_specified_flag: Time specified (1 b)
    - reserved: 63
    - pts_time: 101435253 (0x0060bc775)
    - descriptor_loop_length: 30
    - descriptors
    - segmentation_descriptor
    - descriptor_tag: 0x02
    - descriptor_length: 28
    - identifier: CUE1
    - segmentation_event_id: 44475 (0x0000adb)
    - segmentation_event_cancel_indicator: Not canceled (0 b)
    - reserved: 0x07
    - program_segmentation_flag: Program segmentation mode (1 b)
    - segmentation_duration_flag: Duration present (1 b)
    - reserved: 63
    - segmentation_duration
    - segmentation_upid_type: 1 (0x01)
    - segmentation_cancel_length: 0
  
```

```

    0000: FC 30 34 00 00 00 00 00 00 00 00 00 05 06 FE 06 .04.....
    0010: 08 C7 75 00 1E 02 1C 43 55 45 49 00 00 AD B8 7F ..0...CUE1...
    0020: FF 00 00 67 19 8E 01 08 4E 61 74 20 41 64 20 36 ...g...Nat Ad 6
    0030: 30 02 04 2B 3A 58 B3 0...X.
  
```

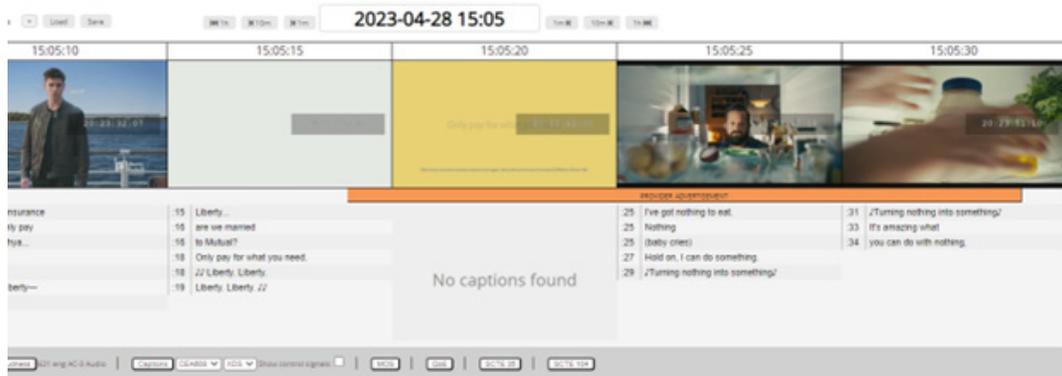
Full Syntax of SCTE35/104 Messages

VideoBRIDGE can log every SCTE35/104 message received by the probe on all monitored streams simultaneously. In addition, the full syntax of every message is captured for later analysis – with an intuitive “human readable” view as well as a raw hex view. This allows broadcast engineers to fully understand the nature and cause of problems with the local DAI system.

PROVING DYNAMIC AD INSERTIONS HAPPENED AS EXPECTED

The final use case for DAI monitoring, is validating that the local ad was actually placed in the content that was delivered to local viewers. This is required to both validate that the DAI is working and to be able to prove to the advertiser that their ad ran on the national network when it was supposed to.

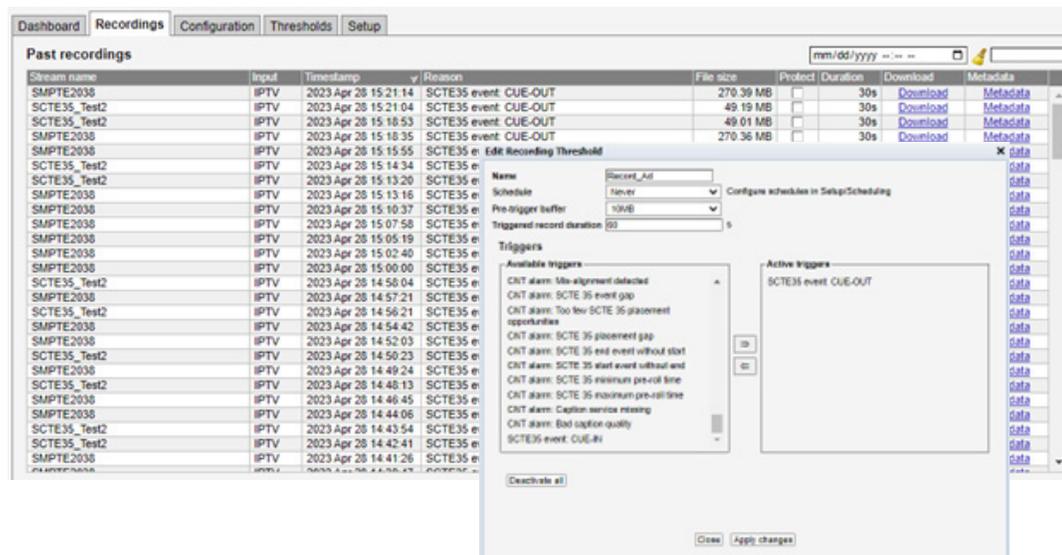
To prove the as-run status of ads, VideoBRIDGE includes two innovative features. The first is an addition to the powerful compliance monitoring timeline view, where video thumbnails, captions and audio loudness measurements are continually captured to a database for later recall. The timeline view now includes the ability to log DAI opportunities, which are then overlaid with the video thumbnails and captions. This shows the user exactly where the ad placement was in relation to the video and if the desired output stream was archived. by showing the resulting local ad overlaid in the stream. This visual representation of the local DAI shows users proof that the ad was inserted as it should be and was delivered to end viewer. This “proof” can easily be recalled for any channel for up to 2 years in the past



Timeline Archive View Showing Placement Opportunity

The second feature for validating ad placement is the greatly expanded recording functionality. The recording option includes nearly 100 trigger items and can be set to trigger on up to 200 streams simultaneously. By utilizing the record triggers for DAI opportunities, the probe can record streams that include the entire ad splice break, including a specified pre-buffer that allows the capture to contain data from even before the trigger.

These captures can then be downloaded from the probe and viewed in a stream player or investigated using offline analysis tools like Sencore’s CMA 1820, which provides an even deeper ad splice analysis.



Record Option Triggered by SCTE35 CUE-Out Messages

SUMMARY

The Sencore VideoBRIDGE product line has provided unmatched monitoring capabilities for broadcast and video delivery networks for the past 15 years. Our dynamic DAI feature set adds to this legacy with expanded functionality, allowing broadcast engineers to monitor and investigate local DAI from end to end and ensuring the validity of vital DAI revenue.

Contact Sencore at +1(605)978-4600 or sales@sencore.com for more information about VideoBRIDGE and how we can help you with local DAI monitoring.

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