

Digital Program Insertion Auditor

Application Software

- ✓ Incoming splice message validation
- ✓ Online log of all messages
- ✓ Offline confirmation of splice and content
- ✓ Capture incoming and outgoing transport stream upon splice message arrival

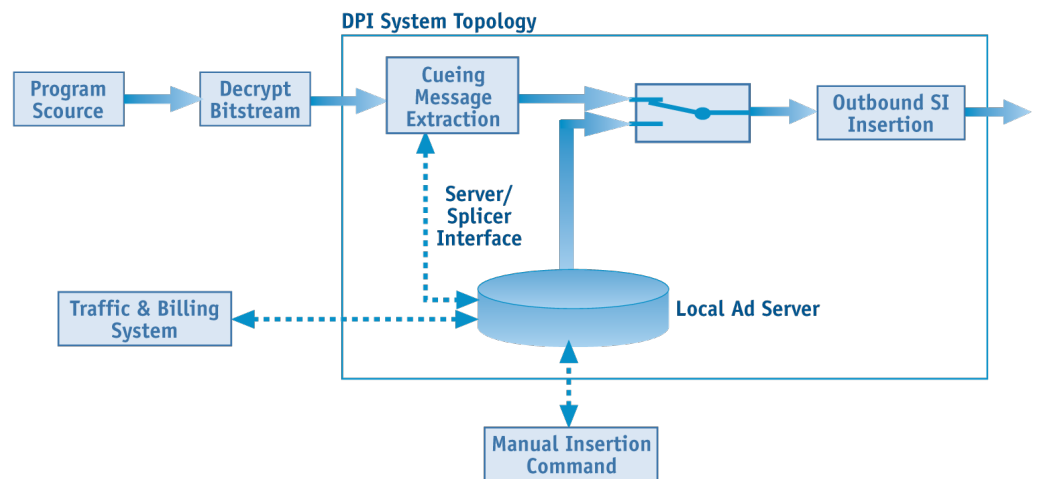
The Torque Digital Program Insertion Auditor is an analysis application that offers a range of logging and reporting capabilities, which allow operators to monitor and audit the accuracy of digital program insertion (DPI).

The DPI Auditor is built based on the ANSI/SCTE 35 2001 standard (formerly known as DVS-253 and also known as ITU-T J.181). Developed from close monitoring of the evolution of program insertion technology and corresponding changing needs, DPI Auditor is instrumental in the monitoring and verification of DPI.

Automatic Digital Splicing

Torque DPI Auditor supports the ANSI/SCTE 35 2001 standard that defines a fully digital mechanism to control remote splicing equipment via cueing messages embedded in the transport stream. These messages contain unique splice event ids which indicate a current or future avail – a time slot sold to local operators to insert their own commercials. The core of the standard is centered on an SIT (Splice Information Table) which can contain a schedule message or an insert message. An insert message identifies a specific avail by a unique event ID, the starting time of the event, and the duration of the break.

Ad insertion systems separate splicing commands from the inbound transport stream, switch between the network feed and the local ad server, and provide signaling and coordination with the local ad server or VTR.



Time	UTC Time	Source	Source Name	PID	CmdType	Action	EventID	Services	CompTags	SpliceTime	Duration	OOB	AR	ProgramID	Avail	AvailCount
15:06:00	07:06:00(+8.0)	00		1390	insert	splice	100000	Soap East [30], Soap E AC3 [31]		2004-02-12 15:06:06		1		1000	1	8
15:06:23	07:06:23(+8.0)	00		1390	insert	splice	100000	Soap East [30], Soap E AC3 [31]		2004-02-12 15:06:31		1		1000	1	8
15:06:43	07:06:43(+8.0)	00		1390	insert	splice	100000	Soap East [30], Soap E AC3 [31]		2004-02-12 15:06:51		1		1000	1	8
15:07:05	07:07:05(+8.0)	00		1390	insert	splice	100000	Soap East [30], Soap E AC3 [31]		2004-02-12 15:07:12		1		1000	1	8
15:07:25	07:07:25(+8.0)	00		1390	insert	splice	100000	Soap East [30], Soap E AC3 [31]		2004-02-12 15:07:32		1		1000	1	8
15:07:45	07:07:45(+8.0)	00		1390	insert	splice	100000	Soap East [30], Soap E AC3 [31]		2004-02-12 15:07:53		1		1000	1	8
15:08:05	07:08:05(+8.0)	00		1390	insert	splice	100000	Soap East [30], Soap E AC3 [31]		2004-02-12 15:08:13		1		1000	1	8
15:08:26	07:08:26(+8.0)	00		1390	insert	splice	100000	Soap East [30], Soap E AC3 [31]		2004-02-12 15:08:33		1		1000	1	8
15:08:45	07:08:45(+8.0)	00		1390	insert	splice	100000	Soap East [30], Soap E AC3 [31]		2004-02-12 15:08:54		1		1000	1	8

Effective Monitoring & Validation

The DPI Auditor provides an expandable range of monitoring and validation capabilities. Incoming splice message validation, online logging of all messages, capturing of incoming and outgoing transport stream upon splice message arrival, and offline confirmation of splice and content are crucial to accurate verification of the DPI process.

Other features include incoming splice message validation, capturing incoming and outgoing transport stream upon splice message arrival, alarms on arrival of user selectable tables or fields, long-term storage of logs, and search capability for easy retrieval of logged information for verification.

Customized reports can also be generated based on summarized or consolidated user-specified parameters. These reports can be useful for billing verification or other specific needs by extracting only messages pertaining to a specific service, PID or provider.

Full Support for DPI

DPI is supported on two tiers: a built-in function in DVMon, and DPI Auditor, a separate DPI analysis application with enhanced features.

While the basic DPI function that comes with the standard DVMon software displays and decodes DPI messages, the DPI Auditor boasts enhanced features including expanded logging and analysis features – online logging of all messages, offline confirmation of splice and content.

Feature	Standard DVMon	DPI Auditor Application
Display DPI messages in Table Decode Window	✓	✓
Log arrival of DPI messages in HTML interface		✓
Filter log display based on user criteria		✓
Execute alarm on arrival of DPI table		✓
Long-term storage and retrieval		✓

```

Current
  0 PAT (1 table)
  1 CAT (1 table)
  2 PMT (12 programs)
    5001: 1 Default Channel
    5010: 10 Toon East [10]
      1130 Audio
      1132 Audio
      1160* Video
      1170 Unknown
    1190 Private SI
    5011: 11 Toon E AC3 [1]
    5020: 20 Toon West [20]
    5021: 21 Toon W AC3 [2]
    5030: 30 Soap East [30]
    5031: 31 Soap E AC3 [3]
    5040: 40 Soap West [40]
    5041: 41 Soap W AC3 [4]
    5110: 110 ABC Fam Back
    5111: 111 ABC Fam Back
    5200: 200 OS Download
  3 TSOT
  58 DSM-CC MPE
  59 DSM-CC U-N
  60 DSM-CC DO
  61 DSM-CC SD
  62 DG
  64 NIT (actual) (3 tables)
  65 NIT (other)
  66 SDT (actual) (1 table)
  70 SDT (other)
  74 BAT
  78 EIT (actual, present)
  79 EIT (other, present)
  80..95 EIT (actual, sched)
  96..111 EIT (other, sched)
  112 TDT (1 table)
  113 RST
  114 ST
  115 TOT
  116 AIT

16:52:05.068 PID 0x1392 (5010):
program_map_section
  table_id 2 [TS_program_map_section]
  section_syntax_indicator '1'
  section_length 56
  program_number 10
  version_number 7
  current_next_indicator '1'
  section_number 0
  last_section_number 0

PCR_PID 0x0488 (1160)

program_descriptor_list:
  private_data_indicator_descriptor
    private_data_indicator 1396789331
  CA_descriptor
    CA_system_ID 3584 [Scientific Atlanta]
    CA_PID 0x177A (6010)
  private_data_byte
  registration_descriptor
    format_identifier 1129661769 [CUEI (SCTE DVS-253)]
    additional_identification_info

elementary_stream_list:
  stream_type 2 [MPEG-2 video (ISO/IEC 13818-2/H.264)]
  elementary_PID 0x0488 (1160)

  stream_type 4 [MPEG-2 audio (ISO/IEC 13818-3)]
  elementary_PID 0x046A (1130)

  stream_type 4 [MPEG-2 audio (ISO/IEC 13818-3)]
  elementary_PID 0x046C (1132)

  stream_type 128 [user private]
  elementary_PID 0x0492 (1170)

  stream_type 134 [CUEI (SCTE DVS-253)]
  elementary_PID 0x04A6 (1190)
  
```

```

5011: 11 Toon E AC3 [1]
5020: 20 Toon West [20]
5021: 21 Toon W AC3 [2]
5030: 30 Soap East [30]
5031: 31 Soap E AC3 [3]
5040: 40 Soap West [40]
5041: 41 Soap W AC3 [4]
5110: 110 ABC Fam Back
5111: 111 ABC Fam Back
5200: 200 OS Download
3 TSOT
58 DSM-CC MPE
59 DSM-CC U-N
60 DSM-CC DO
61 DSM-CC SD
62 DG
64 NIT (actual) (3 tables)
65 NIT (other)
66 SDT (actual) (1 table)
70 SDT (other)
74 BAT
78 EIT (actual, present)
79 EIT (other, present)
80..95 EIT (actual, sched)
96..111 EIT (other, sched)
112 TDT (1 table)
113 RST
114 ST
115 TOT
116 AIT
126 DIT
127 SIT
128..129 CMT (22 tables)
193 CNT
197 CNTC
198 SMT_OSIT
199 CIT_ONIT
252 CUEI (1 table)
1390:

16:52:13.939 PID 0x056E (1390):
splice_info_section
  table_id 252 [splice_info_section]
  section_syntax_indicator '0'
  section_length 32
  protocol_version 0

encrypted_packet '0'
encryption_algorithm 0 [no encryption]
pts_adjustment_H 0
pts_adjustment_L 0
cw_index 0
splice_command_type 5 [Insert]
splice_insert
  splice_event_id 100000
  splice_event_cancel_indicator '0'
  out_of_network_indicator '1'
  program_splice_flag '1'
  duration_flag '0'
  splice_immediate_flag '0'
  splice_time
    time_specified_flag '1'
    pts_time_H 1
    pts_time_L 104690900
  unique_program_id 1000
  avail 1
  avail_count 8

descriptor_loop_length 0
alignment_stuffing

CRC_32 0x3E8B0B27
  
```