TS Signal Processing

Overview

ENCODED MEDIA STREAM PROCESSING

Starfish Technologies offer a range of software-based functionality to process MPEG-2 Transport Streams. The technology operates with all currently used video encoding formats including MPEG2, H264, HEVC / H265 and resolutions including, SD, HD, 4K and 8K.

The technology operates in one of two modes:

- No-recode: Multiple streams can be processed on a single physical host as each one consumes very low CPU and runs with very low latency.
- Decode-recode: Requires higher CPU and latency, but allows graphics overlay, transcoding to different formats/bitrates on the output and frame-accurate transitions away from key frames. This uses integrated Main Concept codecs.

Systems can be deployed on-prem using Windows server operating systems, or deployed on-prem, hybrid or cloud using Kubernetes (running o Linux).

Typical applications include processing broadcast TV streams at the broadcaster mezzanine level and further downstream at edge distribution or affiliate distribution hubs. These include cable distributors, OTT platform providers and satellite distributors.

A full REST API is available to allow system monitoring and configuration.

All applications support 4 live stream inputs - typically configured as two independent live sources with redundant signal streams. In this mode the inputs operate with SMPTE 2022-7 seamless input protection. There are two outputs configured as identical redundant streams.

Input streams can be UDP, RTP, SMPTE-2022-7, SRT or Zixi.

Capabilities

No Recode mode

Live stream switching
Switching between the live stream inputs. Three modes of operation are available to provide optimum results based on the application i.e. switching from redundant signal sources or from different content streams.

Repackaging and sending to multiple destinations
The network packaging is stripped off at the input TS and re-applied at the output. For example, you can have one SRT and one SMPTE-2022-7 pair as the switch inputs, with the outputs set as Zixi and RTP. The selected input will be delivered to all configured outputs. The output can also be captured to file.

Switching from a live input stream to looping TS file content
Applications include slating with a static channel information page or playing an information clip in a loop. Often used for rights-management by restricting access to certain recipients.

Switching from a live input stream to insert a playlist of TS files
Iincludes schedule driven ad server functionality to process ad break schedules, determine if the required content is stored locally, automatically pull any content that isn't stored locally, report if content is not available, automatically replace missing content with customer-provided ever-green material, whilst maintaining break sequence integrity and duration. Produce As Run reports in a specified format. Propagation delay is minimised.

Switching from a live input stream to a live web site page
Encode a customer-specified webpage into a transport stream with video and audio, matching your standard input format. This encoded webpage TS can be delivered in any of the supported output formats and configured as an input to the switch. The same encoded webpage TS can be used as an alternative source for multiple channels.

STCE-35 insertion
Insert SCTE-35 PID(s) if none exist in the input and insert SCTE-35 messages into the stream. Insert splice_insert and time_signal messages, each with multiple descriptors. Each message can be inserted onto one or more PIDs. The REST API allows customers to send messages to be queued for future insertion, or to be inserted asap.

PID mapping, PID removal and SDT/PAT updates
PID mapping can be configured as static maps (for any PID) or based on descriptor content for SCTE-35 PIDs. PIDs can be removed (after being used to trigger operations). Also, we can edit the SDT and PAT tables.

Decode-recode mode (all the above, plus…)

Transcoding
Transcode the audio and video tracks from the input to a customer specified format for the output. This can be combined with logo/watermark insertion and TS playout to create a per-operator distribution stream from your standard mezzanine format.

Logo insertion
Overlay a static or animated graphic supplied in either .BMP or .TGA graphic file with alpha channel.

Watermark Insertion
Used in Anti-piracy applications. Integration with watermark providers API.

Automation and Monitoring

Automation can be controlled by REST API, incoming SCTE-35, Time of day (including embedded SEI timecode), Integration with the customer transmission systems using our Automation Server.

Role-based authentication with optional Active Directory integration and Multi-factor Authentication provides security and traceability.

A modern, scalable website provides operators with insight and control