

QoS & QoE Video Quality throughout the Processing & Delivery Flow by 24/7 monitoring



STREAMPROBE 2110

For uncompressed streams in the Studio & 2022-6 (SDI over IP)

STREAMPROBE IPTV

For linear TV distribution to consumers
TS over IP, Multicast TS

STREAMPROBE OTT

For live content distribution to terminal devices
Live ABR streams, Live OTT distribution

STREAMPROBE VOD

For Video on Demand Services
ABR assets, xVOD, Replay, Catch-up, ...

Monitor the service quality at all the strategic points of the network & Identify the issue origin at a glance

12000+ IPTV/OTT SERVICES MONITORED 24/7

CENTRALIZED SUPERVISION, MANAGEMENT & REPORTING

APPLICATIONS & BENEFITS

Increase Service Uptime by detecting issues before your Customers do

- 24/7 real-time supervision & alerting

Monetize your Ad Insertion services

- Secure Ad Insertion revenues by 24/7 control of all SCTE-35 triggers

Optimize OPEX daily operations

- Fast training for operational teams
 - Intuitive and easy to use User Interface, even for non technical operators
 - Pay as you grow with flexible licensing & deployment architecture
- High density full SW solution installed on-prem bare-metal / virtualized, cloud AWS

Optimize Maintenance Time and Costs

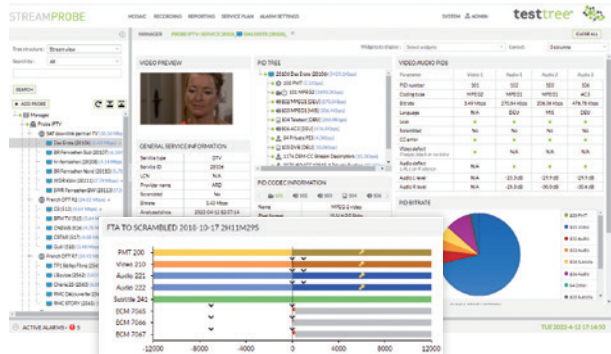
- Quick investigation and problem solving:
 - Live Thumbnail Mosaic to view the quality status of all services from a unique interface
 - MacroService view to monitor each service throughout all network stages and pinpoint the issue's root cause at a glance
 - Drill down analysis, on-error proof recording
 - Live streaming capabilities
 - Powerful NBI/API for 3rd Party NMS integration for Orchestration

Report your SLA commitments

- Customized Quality Reports generation for SLA commitments
- Customized email, Slack, Google chat notifications...
- Compliancy 24/7 recording

KEY HIGHLIGHTS

QoS – Service Availability & Integrity Linear uncompressed & multicast TS



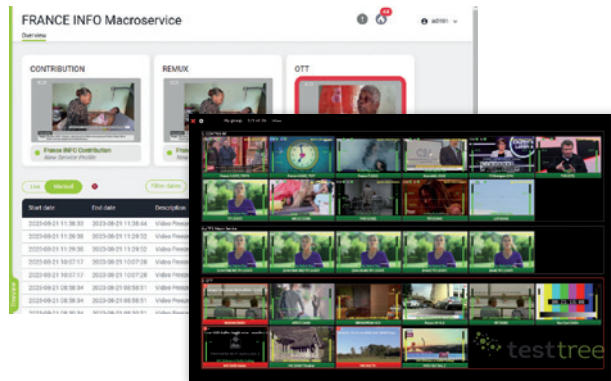
IP network monitoring: RTP, FEC, Jitter, Packet Inter-Arrival Time...
ST2110 & 2022-6
ETR 101 290 compliancy
PSI/SI, bitrates
CAS <-> FTA transition monitoring

QoS – Service Availability & Integrity OTT live & VOD (SVOD, TVOD, nPVR, Catch-up/Replay)



Manifest & all Layers integrity
Download quality metrics (CDN, Origin)
Adaptations to available network link capacity: Manifest or QoS only,
Round-Robin, selectable Layers
Configurable monitoring campaigns for VOD libraries

QoE – Audio & Video Service Quality



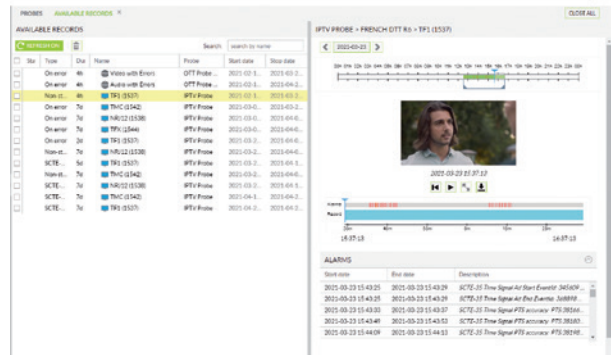
Uncompressed & compressed content decoding for defect detection:
freeze, black, silence
Subtitles DVB, HLS webVTT, DASH TTML
DRM decryption Widevine, FairPlay, PlayReady
(CENC, Sample-AES, AES-128)

Reporting & NBI NMS integration



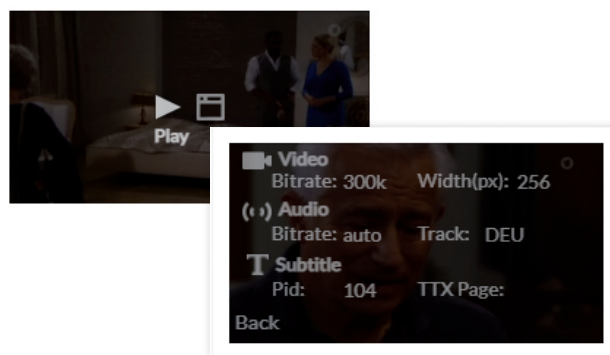
Quality statistics report generation per Service
Powerful NBI for 3rd party NMS Supervision & Orchestration
- SNMP trap alerts, e-mail notifications
- API for monitoring
- API for stream provisioning & monitoring planning
Per Service, highly configurable alarming templates

Video Recording



Compliance 24/7 or on-error proof
Record navigation, alarm timeline, segment download
For both linear multicast
& OTT streams

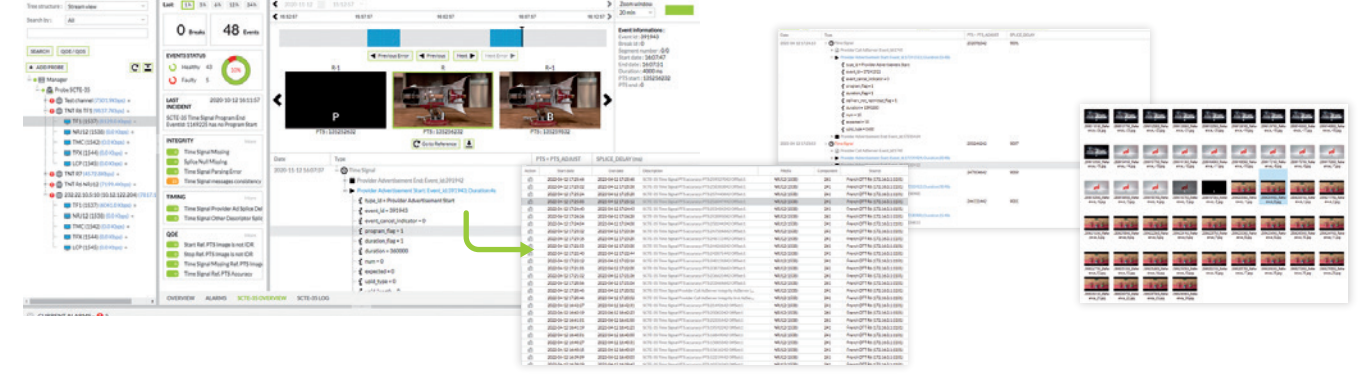
Video Streaming



Live Service playback for confidence monitoring
Integration into 3rd party Service Dashboards

KEY HIGHLIGHTS

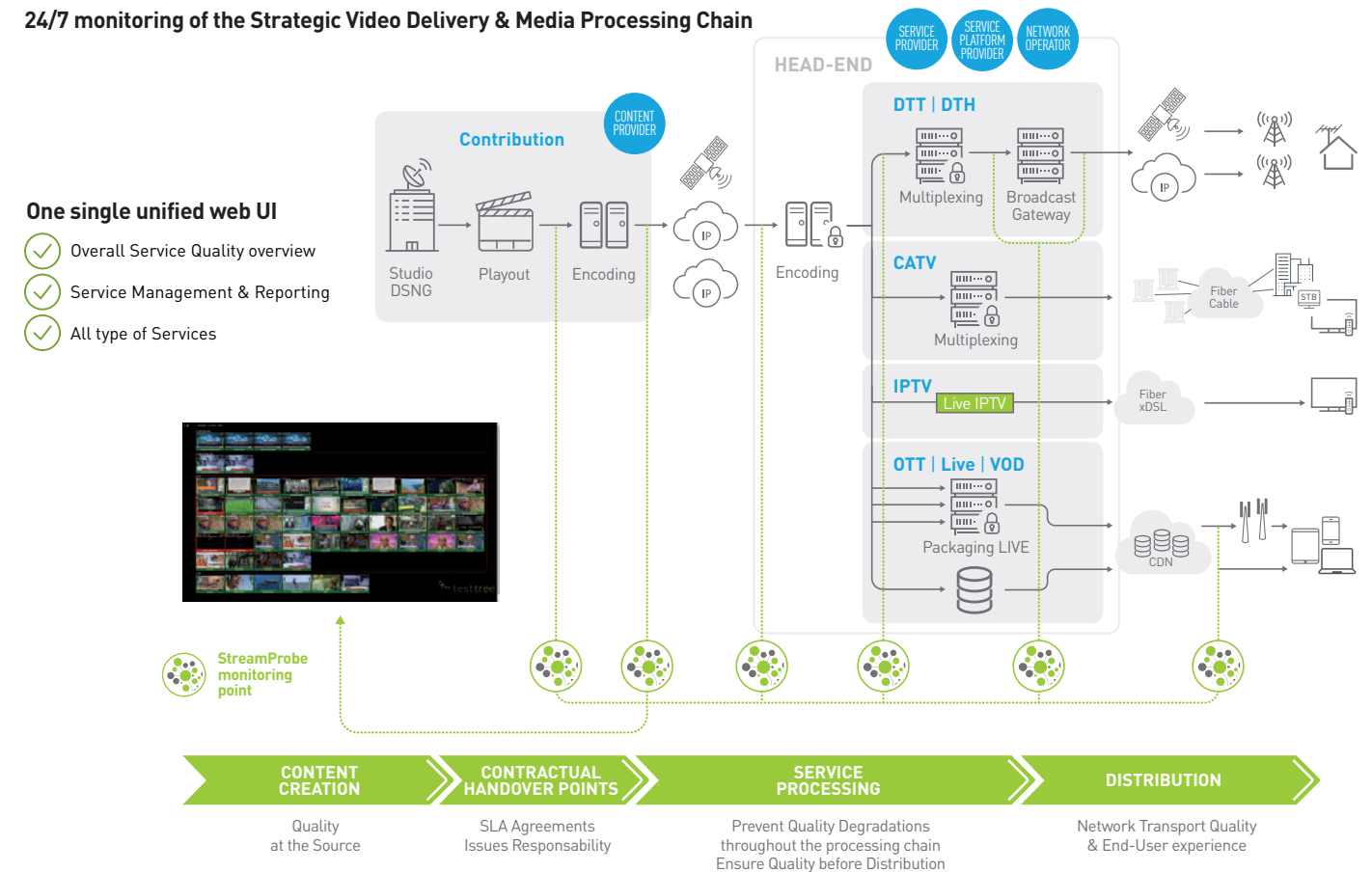
Ensure Ad revenues by preventing Insertion failures



Complete SCTE-35 presence, integrity & timing monitoring
Image extraction around the insertion points, automatic detection if the triggers do not point the right frames (typically a frame after a jingle or the first frame of a new ad scene)
Proof recording and trigger logging

END TO END SERVICE AVAILABILITY & QUALITY

24/7 monitoring of the Strategic Video Delivery & Media Processing Chain



Licensing

1. Bitrate capacity / # assets to monitor simultaneously
2. Feature SW pack

ACCESS
Full QoS & QoE

Must have
Service Availability, Integrity & Audio/Video Quality monitoring

PERFORMANCE
Operational Value Add-ons

Advanced Features for an **efficient day to day Operation**

ULTIMATE
Additional Services

Dedicated Features for **additional Services monitoring**

TECHNICAL SPECIFICATIONS

STREAMPROBE

QoS - LINEAR SERVICE AVAILABILITY & INTEGRITY

ST2110-20, ST2110-30, ST2022-6

MPEG-2 TS (SPTS/MPTS)

ETSI TR 101 290 Priority 1, 2, 3

FEC support (packets recovered/lost), IP jitter, IP Packet inter-arrival time...

MDI: Delay Factor, Media Loss Rate, Delta (min, max, average), Drift & Period Drift

PSI/SI tables, bitrates stream/service/PID

CAS monitoring

EMM/ECM presence, repetition, bitrates; configurable alarm thresholds

FTA <-> scrambled transition monitoring: transition timing alarms with detailed graphical display

QoS - ABR SERVICE AVAILABILITY & INTEGRITY

HLS, MPEG-DASH: playlist integrity & network performance check

Manifest integrity check, content display & download

Profile information: availability, type, bitrate statistics, codec, resolution, base and relative URL,

playlist content/format, chunk number, media sequence, persistence...

HTTP connection time statistics: connection, DNS redirection, upload, download

Monitoring adaptations to available network link capacity: Manifest, QoS only, Full QoS & QoE,

Round-Robin, selectable Layers

MONITORING CAMPAIGNS FOR VOD SERVICES

Adapted for both static & dynamic VOD libraries

One-shot or recurrent (several hours, days, weeks...)

Monitoring modes: QoS, QoS & QoE, QoS with QoE the first time only

ABR asset provisioning: manual (CSV import) or automatic via a dedicated API (requires specific integration services)

RECORDING

24/7 compliancy recording with predefined history depth

On-error recording on fault detection

Scheduled recording at predefined date & time

Access via the web UI: video playback preview, file download (full or partial), associated alarms

timeline & log

For both TS & ABR streams

Storage capacity to dimension depending on the bitrate capacity to monitor

AD INSERTION MONITORING

Based on SCTE-35 SpliceInsert, TimeSignal, SNPTV AFMM v2.25

Triggers presence, integrity and timing check, log export (JSON)

Reference Frame QoE: IDR and PTS check, automatic detection of scene cut

Splice point thumbnails (50 images around the splice point)

Splice point video recording (before & after the splice point)

TECHNICAL CHARACTERISTICS

SW Appliance solution

Bare-metal, VM (ESXi >v6.0, KVM), AWS cloud

Maximum Appliance monitoring capacity: 100Gbps uncompressed, 10Gbps TS, 1Gbps OTT, 100 VOD assets

Performance CPU, RAM, HDD depending on the bitrate capacity to monitor

QoE - SERVICE AUDIO/VIDEO QUALITY

Video defect detection: freeze, black, missing Intra

Video encoding information: type, pixel format, profile, level, GOP structure and size,

image count and weight, width, height, aspect ratio, frame rate and type, VB delay

Audio defect detection: silence, level too low/high

Audio encoding information: type, channel number and layout, sample rate and format

Subtitles DVB and Teletext: decoding and display

Subtitles HLS WebVTT and DASH TTML: decoding and display

ABR streams DRM decryption

CENC, Sample-AES, AES-128 – Widevine, FairPlay, PlayReady

Key retrieval via direct Key Server access (proprietary, CPIX)

Uncompressed formats: ST 2110-20/30 PCM, ST 2022-6 video, SD, HD, 3G, UHD

Compressed formats: SD & HD MPEG-4 AVC/H264, 4K HEVC/H265, MPEG-2

audio/video, MPEG-1 audio, AAC, HE-AAC, HE-AACv2, AC3 Dolby Digital, EAC-3 Dolby

Digital Plus

Thumbnail Mosaic view

All services view at-a-glance on a thumbnail wall, real-time update

Highly customizable per user login: grouping, audio levels, subtitles, penalty box

Monitoring by exception: display only faulty services – penalty box

MacroService view

Track service quality in several monitoring points throughout the delivery chain

Map View

Overview of the status of all your monitoring points worldwide

Thumbnail History view for OTT & VOD monitoring

ABR Service Quality overview in time: alarms timeline with associated video thumbnails

Visual tool for fault investigation on all ABR stream's profiles, up to 7 days

LIVE VIDEO PLAYBACK

Video Streaming over low bandwidth links (transcoding)

300kbps by default, possibility to configure the target bitrate, video resolution, audio PID selection

Web UI display or 3rd party NMS dashboard integration display

REPORTING & NBI NMS INTEGRATION

Per Service, configurable alarming thresholds: General, Daily and Weekly Alarm Profiles

Alarm log history export (CSV)

Quality statistics reports (CSV, PDF)

SNMPv2 support for alarm traps, e-mail notifications, Google Chat & Slack notifications

Open API (HTTP/JSON API) for stream provisioning, monitoring scheduling and

monitoring information retrieval

ORDERING CODES

StreamProbe

1. What type of Services to monitor ?

StreamProbe 2110, StreamProbe IPTV, StreamProbe OTT, StreamProbe VOD

2. **Total capacity** to monitor simultaneously: Mbps, Gbps, #VODassets

3. Feature SW Pack (depending on the Probe type)

ACCESS: Full QoS & QoE, Mosaic View, Map View

PERFORMANCE: ACCESS + Operational Add-ons (MacroService View, Google Chat

& Slack notifications, Recording, Video Streaming, Thumbnail History)

ULTIMATE: PERFORMANCE + Additional Services (4K, HEVC, Ad Insertion monitoring,

CAS, Round-Robin)