24/7 Video QoS & QoE Monitoring
Solve problems Quicky
Save time & costs

STREAMPROBE
2110
For uncompressed streams in the Studio
ST 2110 & 2022-6

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 service quality at all the strategic points of the network & Identify the root cause 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, WhatsApp business, Slack, Google chat notifications...
- Compliancy 24/7 recording

testtree™

QoS – Service Availability & Integrity
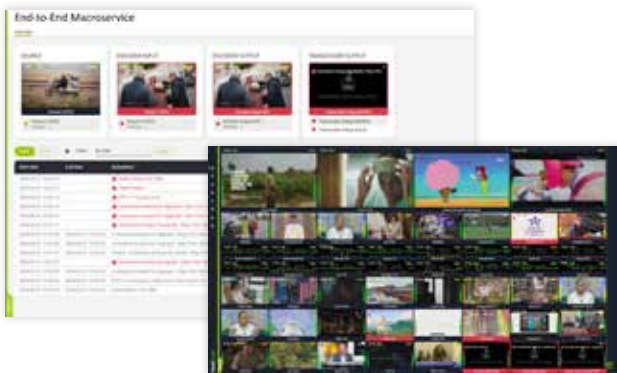### Linear Uncompressed & Multicast TS

IP Network Monitoring: RTP, FEC, Jitter, Packet Inter-Arrival Time...
ST 2110 & 2022-6 (SDI over IP)
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

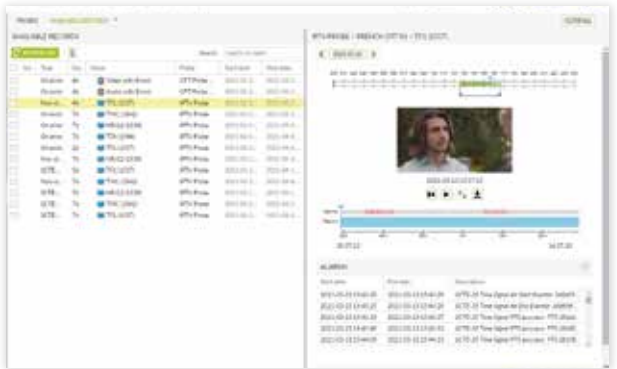## QoE – Audio & Video Service Quality

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)

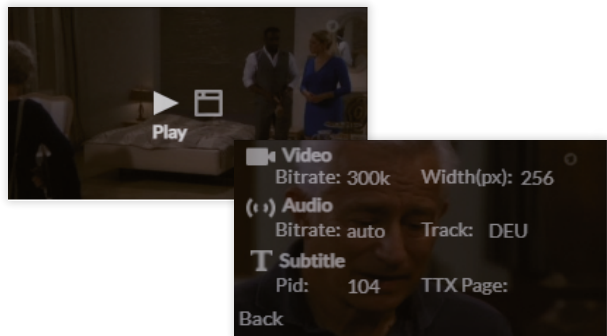## Reporting & NBI NMS integration

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

Compliancy 24/7 or on-error proof
Record navigation, alarm timeline, segment download
For both linear multicast & OTT streams
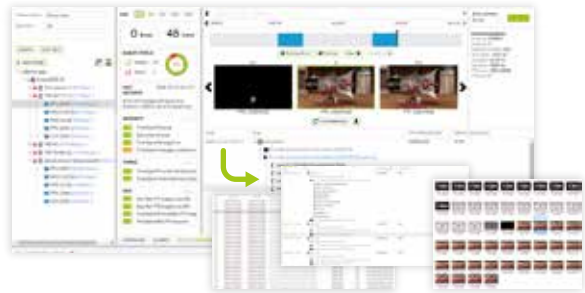Automatic or Manual export to an external NAS

Video Streaming

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

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

Reduce Churn
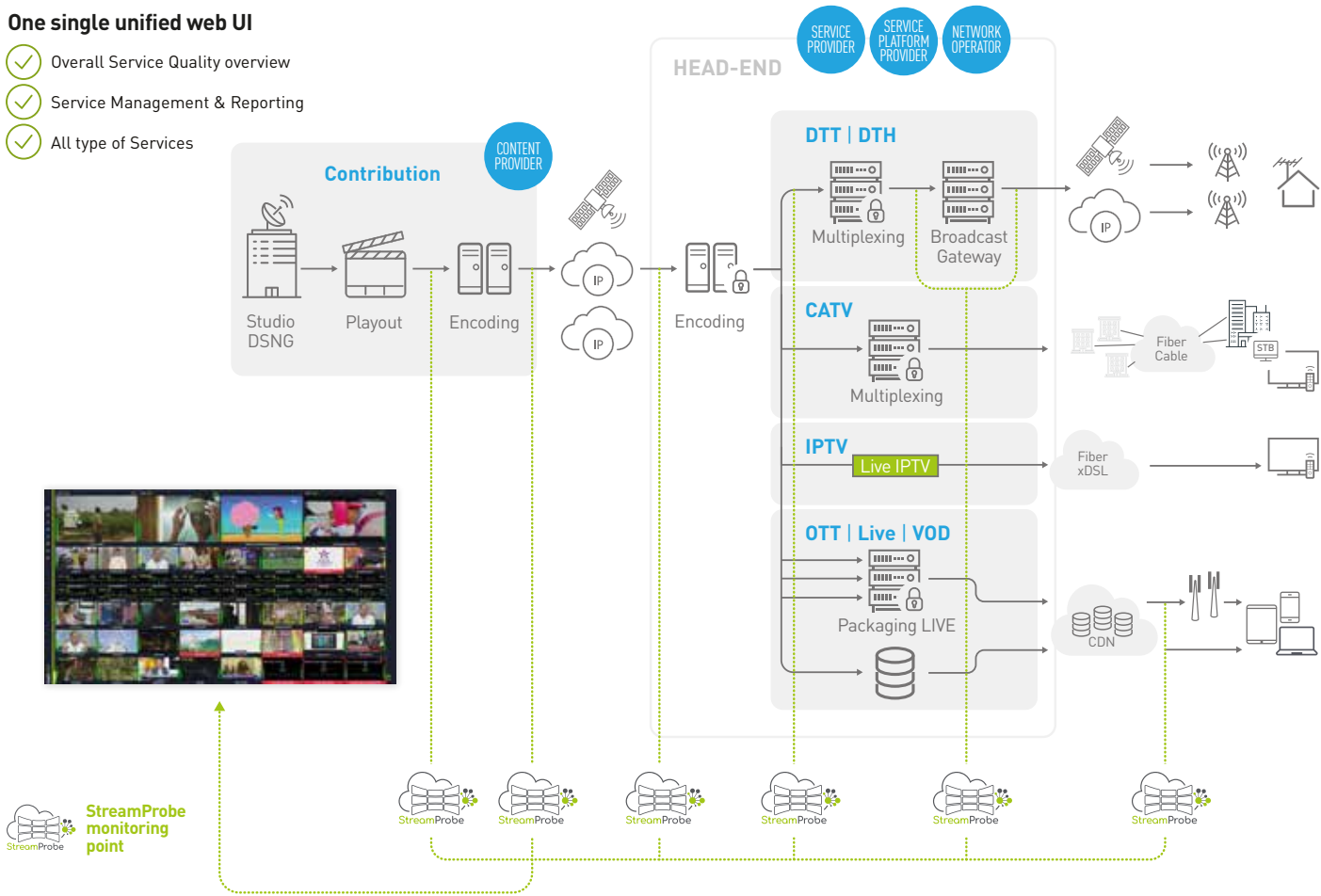### By Providing the Best Video Quality

VMAF

Advanced video quality monitoring, based on VMAF score monitoring
Optimizing the encoder/transcoder configuration to find the best compromise
between video compression and human eye quality perception

END TO END SERVICE AVAILABILITY & QUALITY
24/7 monitoring of the Strategic Video Delivery & Media Processing Chain

One single unified web UI
- Overall Service Quality overview
- Service Management & Reporting
- All type of Services

CONTENT CREATION	CONTRACTUAL HANDOVER POINTS	SERVICE PROCESSING	DISTRIBUTION
Quality at the Source	SLA Agreements Issues Responsability	Prevent Quality Degradations throughout the processing chain Ensure Quality before Distribution	Network Transport Quality & End-User experience

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
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: custom Linux based for OS
Bare-metal, VM (ESXi >v6.0, KVM), AWS cloud
PCIe modules can be recommended for RF signal demodulation: DVB-T/T2, DVB-S/S2, DVB-C (J.83 A,B,C)
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

Advanced Video Quality with VMAF
Alarms based on VMAF score to optimize the encoder/transcoder configuration and find the best compromise between video compression and human eye quality perception

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

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

QoS & QoE monitor
Mosaic , MAP View

PERFORMANCE
Operational Value Add-ons

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

ACCESS PACK +
Recording, Video Streaming
Thumbnail History
Macroservice View

ULTIMATE
Additional Services

Dedicated Features
for **additional Services monitoring**

PERFORMANCE PACK +
4K HEVC monitor
Ad Insertion monitor
CAS Scrambling, T2MI
Round-Robin
VMAF

RoHS