Service Quality for ATSC 1.0 & NextGen TV by 24/7 Monitoring

ATSC 1.0/3.0 nextgenTV

8000+ PROBES DEPLOYED

STREAMPROBE

Video QoS & QoE
Studio, Encoding,
Multiplexing

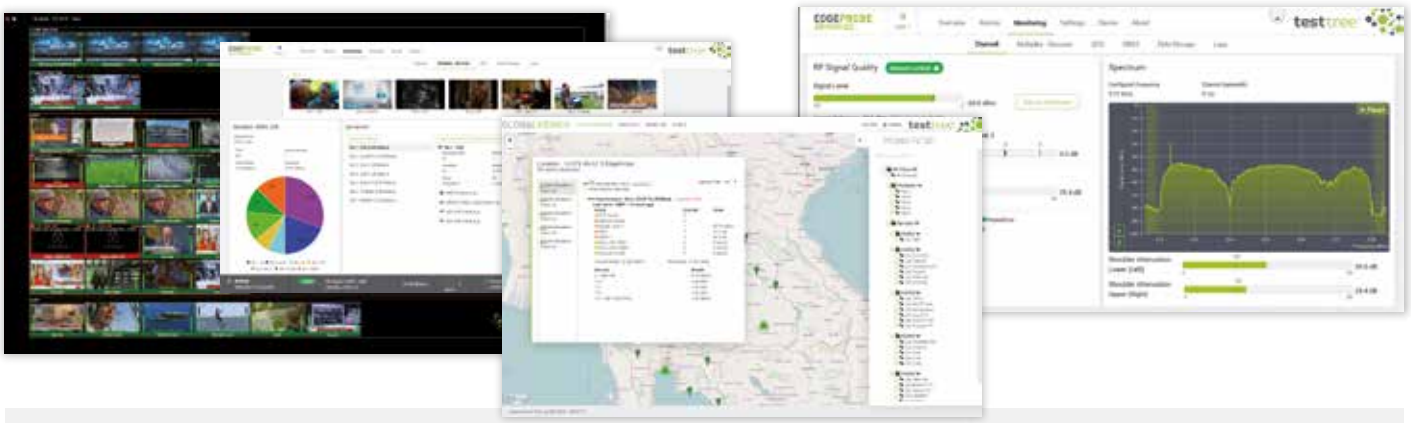
EDGEPROBE

Transmission & Reception
RF Stability
& Synchronization

GLOBALVIEWER

Overall View of the
Broadcast Network Quality
& Service Availability

TestTree provides a complete and comprehensive solution to ensure **Quality for all ATSC Services throughout all strategic stages of media processing, transport distribution & transmission flow** in your station, by 24/7 monitoring. Ideal for all **TV Service Providers & Network Operators**, looking to **ensure the best End-User Quality of Experience** all while **optimizing OPEX**.



APPLICATIONS

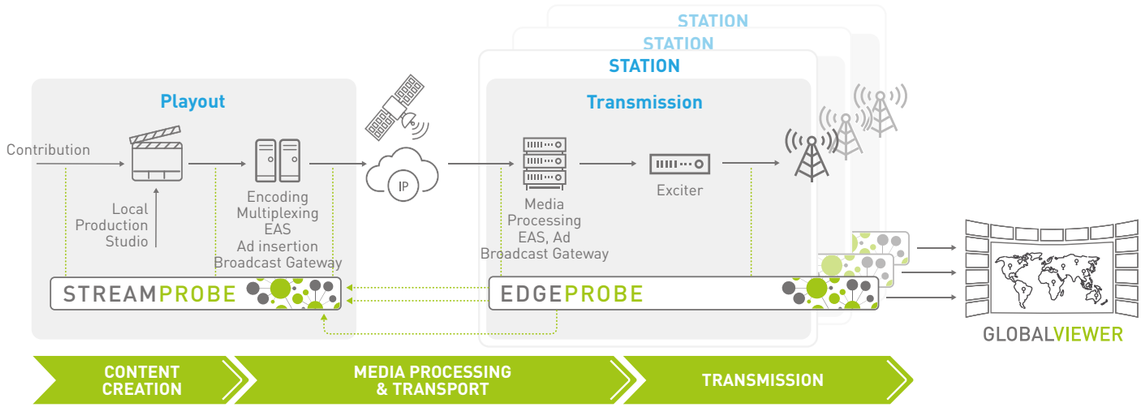
- Overall Service Availability, Network & end-user Reception Quality assurance
- Increase uptime by detecting issues before your customers do
  By 24/7 real-time supervision & alerting
- Optimize daily operation & maintenance
  Drill down analysis, on-error proof recording
- Quality Reports generation for SLA commitments
- Compliancy 24/7 recording
- Secure Ad Insertion revenues by 24/7 control of all SCTE-35 triggers

BENEFITS

- All Services Quality view at-a-glance:
  Thumbnail Mosaic Wall or TX/RX Site Map
- Comprehensive, easy-to-use web GUI
  Fast training of operational teams
- Ready for large deployments
  Remotely accessible, powerful NBI for NMS integration, compatible with low bandwidth control networks (3G/4G), low power consumption 25W
- Pay as you grow with flexible licensing & deployment architecture
  HighDensity full SW solution for Studio & MCR
  Embedded HW device for Transmission/Reception sites

END TO END SERVICE AVAILABILITY & QUALITY

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



Quality at the source
- Contribution SLA Agreements
- Issues Responsability

Quality throughout the media processing chain
- Prevent audio & video degradations
- Ensure Quality before TX transmission

Broadcast Network Quality & End-User experience

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RF QOS – BROADCAST TRANSMISSION & RECEPTION QUALITY

HW 1RU devices for TX & RX sites

8000+ PROBES DEPLOYED

ATSC 1.0/3.0 nextgenTV

Accurate RF Signal Quality metrics: Power, MER, SNR, BER
RF Spectrum & Constellation, multi-PLP support for ATSC 3.0
Highly customizable alarming thresholds
Complete SFN synchronization monitoring for ATSC 3.0 on Transmission site for quick identification of which TX is out of sync
- RF signal **Time** & **Frequency** synchronization
- Before modulation: **Distribution Network Delay** (STLTP) for MND tuning

... and in SFN overlapping areas for actual Field Reception Quality by Channel Impulse Response w/ TX ID and, coming soon, **TestTree's Unique Echo Pattern monitoring mode** for a more reliable Echo identification
Internal GNSS receiver & 1PPS in for SFN monitoring, **Dual Power Supply (PSU)** for robustness
Up to 4 RF input channels monitored in // within 1RU device; possibility to **extend by Round-Robin sequential monitoring** of several RF channels within one single monitoring input

STB service decoding assurance

TS Full **ETR 101 290** compliancy
PSI/SI/PSIP decoding, Service Bitrates & Video Thumbnails
PLP, **channel usage** statistics, **STLTP** integrity for ATSC 3.0
32GB internal storage for alarm log, RF trends, bitrates (up to 6 months) per monitoring input
For ATSC 1.0, coming soon for ATSC 3.0:
Complete TS Recording for proof & investigation: manual, on-error, scheduled, automatic by external SNMP commands
Video Stream forwarding (return path) to MCR: RF in > ASI out, RF in > IP out
Complete NBI (SNMP, FTP) for **NMS** integration (monitoring configuration, data retrieval, device management)
On-error Recording for proof & issue investigation

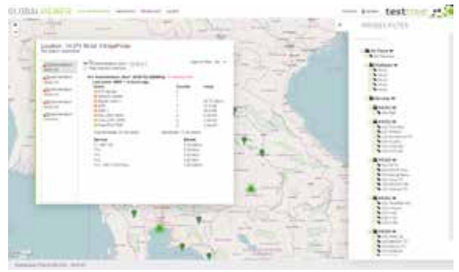
LIGHTHOUSE READY

GLOBALVIEWER

OVERALL BROADCAST NETWORK QUALITY VIEW

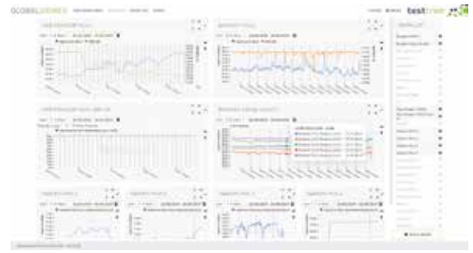
EdgeProbe monitoring information aggregation at MCR/NOC/HE

Supervision & Alerting



Live Network Quality status display on a Map
Customizable display: per Operator, Region, Channel
Real-time notifications (SMS/email)

Quality Dashboard & Reporting



Service Availability & RF Network Quality statistics
Highly customizable Dashboards & automatic Reports for SLA commitments, internal reporting, maintenance & operation

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QOE – CENTRALIZED VIDEO QUALITY

Linear uncompressed & multicast TS, audio & video quality monitoring at MCR/NOC/HE

12000+ IPTV/OTT SERVICES MONITORED 24/7

QoS – Service Availability & Integrity

IP/RTP transport
ST 2110 & 2022-6
ETR 101 290 compliancy
PSI/SI/PSIP, bitrates

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

QoE – Audio & Video Service Quality

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

Video Streaming & Recording

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

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

Ensure Ad revenues by preventing Insertion failures

Complete SCTE-35 presence, integrity & timing monitoring
Image extraction around the insertion points
Proof recording and trigger logging

* Contact us for availability

TECHNICAL SPECIFICATIONS

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MONITORING FEATURES

ATSC 3.0 RF Monitor
Spectrum & Constellation display (Shoulders measure)
Signal level: -100 to -5 dBm
SNR: 0 to 50 dB
MER: 0 to 40 dB (L1-Basic, L1-Detail, PLP)
Pre-LDPC BER, Pre-BCH BER, Post-BCH FER, Packet Error Number, LDPC Iteration

ATSC 1.0 RF Monitor
Spectrum display (Shoulders measure)
Signal level: -100 to -5 dBm
SNR: 0 to 50 dB
Post-Viterbi BER

SFN Monitor in Reception area (RX)
Channel Impulse Response – Echoes alarming, with TX ID detection and echo association

SFN Monitor at Transmitter (TX)
RF signal time synchronization: fast identification of which TX site is causing SFN issues
STLTP distribution Network Delay

ATSC 1.0 Transport Stream - ETR 290 Monitor
MPEG-2 TS Monitor, ETSI TR 101 290 Priority 1, 2, 3

ATSC 1.0 Service Plan
Verify regional services, Service & PID bitrates, presence, Scrambling, PSI/SI/PSIP and Service
Video Thumbnails display

ATSC 3.0 Content Monitor - Service Plan
PLP list & Services list with Bitrates and Channel Usage: key for "Lighthouse" channel-sharing scenario
Modulation parameters with complete decoding of L1 information (Subframes, PLP structure)

ATSC 3.0 STLTP Monitor
Up to 4x Gigabit Ethernet STLTP stream input
IP link monitoring (IP jitter, FEC, Packets lost/recovered)
STLTP integrity (Inner, Outer, L1) and Network Delay

Round-Robin Monitor Mode
Monitor sequentially (round-robin) multiple frequencies over 1 RF input
Monitoring status & context is kept between two successive monitoring rounds

Internal Memory: up to 4x 32GB
32GB per monitoring unit: alarm logs, RF trends, service bitrates up to 4 months
CSV format files, download via web GUI or FTP connection
Demodulated TS recoding (*.ts) files

Automatic on-error, scheduled TS recording for proof & investigation

Complete NBI (SNMP based) for alarm notifications & monitoring info retrieval

Stream forwarding (return path) to MCR

INTERFACES

RF Connector In: Up to 4x RF inputs (N-type female 50 Ω)
Standards: ATSC 1.0, ATSC 3.0 (NEXTGEN TV)
Frequency range: 40 to 1000 MHz
RF Sensitivity: -80 to -5 dBm / 28 to 104 dBµV
BaseBand
Up to 4x Gigabit Ethernet for **IP DATA** in/out (VLAN support)
Up to 4x **ASI** in/out (BNC-type female 75 Ω)
GNSS & Time Reference HW option
1x GNSS antenna input (SMA-type 50 Ω) (GPS/GLONASS), 3.3V antenna power up
1x **1PPS** input (BNC-type female 50 Ω)
1x **10MHz** input (BNC-type female 50 Ω)

PHYSICAL

Height: 45 mm / 1.7 in, Width: 440 mm / 17.3 in, Depth: 300 mm / 11.8 in
Format: 1 RU, width 19", Power supply: 100-240 VAC +/-10%
Power consumption: 25W, **Redundant Power Supply (HW option)**

ENVIRONMENT

Operating temperature: -20 to 55°C / -4 to 131°F
Storage temperature: -20 to 70°C / -4 to 158°F
Humidity: 0 to 95%, non condensing1 monitoring unit, 1 input (RF, ASI or IP)

ORDERING CODES

EdgeProbe Advanced3 ATSC 1.0/3.0

1 RU Monitoring Probe

Single: 1 monitoring unit, 1 input (RF, ASI, IP)
Dual: 2 monitoring units, 2 input (RF, ASI, IP)
Quad: 4 monitoring units, 4 inputs (RF, ASI, IP)

Features SW Pack:
- **ACCESS**: Full RF & SFN monitor, ETR 101 290, Round-Robin, Recording, 32GB internal memory
- **PERFORMANCE**: ACCESS + Service Plan monitor
- **ULTIMATE**: PERFORMANCE + STLTP & IP jitter monitor

HW options:
- Redundant Power Supply
- Internal GNSS receiver

GLOBALVIEWER

MONITORING FEATURES

Live Supervision
Map display of the deployed monitoring Probe
Critical alarming status, service list & bitrates
Direct access to the Probes for detailed monitoring information
Display filtering & restricted user access via customizable Probe groups: region, site, SFN cell, multiplex, service, client...

Reporting
Automatic Report generation (PDF) with raw data (CSV) included in ZIP file
Highly customizable: structure sections, metric graphs, add comments

Analytics
Service Availability & Transmission Quality Trends; based on the Probes monitoring data
Highly customizable dashboard graphs & views

Alerting
Automatic Email / SMS notifications based on the monitoring Probes alarming, with filtering capabilities

Restricted User Overview
User management rights: administrator, manager, operator
Possibility to restrict the views per Service/Multiplex, Operator, Location...

TECHNICAL CHARACTERISTICS

SW solution deployed in virtualized environment (ESXi >v6.0)
HTTP/HTTPS support
Performance CPU, RAM, HDD depending on the number of EdgeProbe monitoring units to supervise

ORDERING CODES

GlobalViewer

Perpetual Software License including:
- 20x TestTree Probe licenses (EdgeProbe monitoring units)
- 10x User access

SW options:
- Additional Probes (per Probe)
- Additional User access (per user login)

STREAMPROBE

cf. **TestTree StreamProbe datasheet**

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