Advances in Monitoring and Control

April 17, 2016

GatesAir Connect | NAB Show 2016

Featuring GatesAir's

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Chief Product Officer
Advances in Monitoring and Control

April 17, 2016
Maxiva™
StreamAssure

Serial data stream, Transmitter/Exciter and modulated RF QoS and QoE monitoring

Powered by Qligent
Monitoring and Control Challenges

Today’s Broadcaster and Multi-Platform Delivery

- More than just Other the Air
  - Media Delivery Platform Expansion
- “Do More with Less”
  - Reduced Operating Budgets
  - Availability of Technical Talent
- Competitive Environments Require High QoS, QoE
  - Higher Quality of Service Expectations by End Customer
  - SLA’s of Major Network Operators
    - Conformance to Contractual Parameters
DIGITAL Terrestrial TV (DTT)

Broadcast Market and Technology Trends are showing no signs of slowing down

- Analog to Digital
- DVB-T to DVB-T2 to ATSC3.0
- SD to HD to 4K to 8K?
- MPEG-2 to MPEG-4 to HEVC
- Additional Multiplexes
- ASI over IP to T2MI to FMI
- Interactive TV
- Targeted Advertising
- Spectrum Repack
- LTE Tower Overlay
- Growing SLA’s
- New Regulations
StreamAssure Summary

- Monitor content and stream along the signal path from studio to coverage area
- Monitor throughout the entire broadcast distribution
StreamAssure Summary

- **Our Specialty**
  - 5-Layer QoS and QoE monitoring
  - Stream and Content analysis

- **Our Benefits**
  - Affordable coverage area monitoring
  - Service Level Agreement verification
  - Regulatory compliance validation
  - Workflow optimization
  - Skill and Staff Augmentation

- **Scalability**
  - Cloud (SaaS) or On-Premise deployment
  - Three probe sizes (Express, Plus, and Pro)
  - Easily manage 1000’s of probes across your distribution footprint

- **Visualization**
  - Multi-Viewer with trend-lines
  - Customizable multi-Dimensional dashboard
  - Exportable reports (Excel, Templates, Clips)

- **Analysis**
  - Parameter correlation analysis
  - Impact Analysis
  - Root Cause Analysis
  - System optimization analysis
Layers of Monitoring

- **Video Layer**

- **Audio Layer**

- **Data Layer**

- **Transport Layer**
Layers of Monitoring

- **Transport Layer**

  - Virtual Channel 17.1: playing movie (HD)
    - Video PID 100
    - Program 1
      - Audio 1 PID 101
      - Audio 2 PID 102
  - Virtual Channel 17.2: playing news (SD)
    - Video PID 200
    - Program 2 (service ID 2000)
      - Audio 1 PID 231
      - Data PID 554
  - Other PIDs

- **RF Layer**

  - Mgmt Info from Host
  - Input Streams / Services
  - Input Formatting
  - Coded Modulation
  - Structure
  - Waveform Generator

**NOTE:** The Packet ID (PID) and Service ID data are described by some tables inside the MPEG-TS: PAT, PMT plus SDT (DVB, ISDB) or TVCT/CVCT (ATSC).
Maxiva StreamAssure - System Diagram

- Verify transport stream, audio, video and ancillary data ahead of transmitter
- Record raw Transport Stream
- Optional – Transcode, stream and record video

- Verify RF, transport stream, audio, video and ancillary data after transmitter
- Transcode, stream and record video for confidence monitoring at Control Center

Correlate main Exciter, Modulator and Transmitter parameters with signal conditions
Product Portfolio

**Single point of monitoring**

**Point** – a standalone version of Qligent Vision for deep, on-site monitoring, go-live support and troubleshooting at transmission sites and local head-ends. Point minimizes your costs - no need to send engineers on-site to investigate intermittent system issues.

**Multiple points of monitoring**

**Vision** – Stream assurance solution for analyzing all quality aspects of media service delivery at any point in the distribution chain for terrestrial, cable, satellite or IPTV networks. Vision provides real-time monitoring as well as comprehensive SLA metrics, trending and data analytics.
<table>
<thead>
<tr>
<th>Maxiva StreamAssure</th>
<th>Express</th>
<th>Plus</th>
<th>Pro</th>
<th>Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF Layer Analysis</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Signal Presence, RF Level, MER, Pre/Post FEC BER</td>
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<tr>
<td>Transport Stream Analysis</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>TR101-290 P1, P2, P3 or ATSC A/87a</td>
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<tr>
<td>Raw Transport Stream Record</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Configurable recording of SPTS or MPTS</td>
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<tr>
<td>Audio/Video QoE Analysis</td>
<td></td>
<td>X</td>
<td>X</td>
<td>Black, Freeze, Silence, Loudness (EBU-R128)</td>
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<tr>
<td>Ancillary Data Analysis</td>
<td></td>
<td>X</td>
<td>X</td>
<td>Closed Caption (CC), Subtitle presence</td>
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<tr>
<td>Transcode/Record/Stream</td>
<td></td>
<td></td>
<td>X</td>
<td>Continuous low-resolution streaming with data burn-in for compliance verification</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Static - Channel name, Station name, Location, Frequency</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dynamic - Date, Time, CC/Subtitles, Audio Bars</td>
</tr>
<tr>
<td>Advantages</td>
<td>Small form factor, Low Bandwidth</td>
<td>Low Bandwidth</td>
<td>Full Featured</td>
<td></td>
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</table>
# Equipment Cost Avoidance

## Current GatesAir (broadcaster) equipment

<table>
<thead>
<tr>
<th>Description</th>
<th>Vendor</th>
<th>Price</th>
<th>Express</th>
<th>Plus</th>
<th>Pro</th>
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</thead>
<tbody>
<tr>
<td>RF Monitoring</td>
<td>Dektec</td>
<td>$3,600</td>
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<tr>
<td>Transport Stream Analysis</td>
<td>Tektronix</td>
<td>$8,370</td>
<td>X</td>
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<tr>
<td>ASI monitor (IP/Coax)</td>
<td>Sencore</td>
<td>$6,500</td>
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<tr>
<td>ASI monitor (RF)</td>
<td>Sencore</td>
<td>$10,989</td>
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<tr>
<td>Compliance Recorder</td>
<td>Polycom</td>
<td>$1,000</td>
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<tr>
<td>A/V QoE</td>
<td>Imagine</td>
<td>$9,500</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Loudness</td>
<td>Imagine</td>
<td>$5,500</td>
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<tr>
<td>Caption</td>
<td>Plura</td>
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<tr>
<td>IP Multiviewer</td>
<td>Imagine</td>
<td>$3,000</td>
<td></td>
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<td></td>
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<td>$48,359</td>
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## Equivalent SA solution

<table>
<thead>
<tr>
<th>Description</th>
<th>Vendor</th>
<th>Price</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>$48,359</td>
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</table>
SaaS – Software as a Service

First to offer delivery monitoring via SaaS model

- Low Entry barrier
  - Easy to use
  - Immediate proof of concept

- Lower Risks
  - Expedited deployment schedule
  - Best practices already inside
  - Higher adoption rates and reduced time to benefit

- Lower Costs
  - Pay as you go
  - Balanced CAPEX vs. OPEX
  - Lower Total Cost of Ownership
  - Savings on technical support and administration staff
  - Always newest version with latest features

- Higher Flexibility
  - Unlimited scalability with Cloud
  - Integration with existing infrastructure

NOTE: Data from IABM and Devoncroft
StreamAssure Dashboard
StreamAssure Impact Analysis

- Impacted parameters
- Time and depth correlation of impacted layers
- Impact Analysis and root cause
StreamAssure Multi-channel

5 Layer Trending:
1. Physical
2. Transport
3. Video
4. Audio
5. Data

High Channel Density Monitoring
StreamAssure Fault Analysis

Video segment capture correlated with a fault

One-click access to probe status page for Real-Time data

Alarm history for this specific parameter

Trend line correlated with a fault
StreamAssure Reporting

- Customize reports. Pick Probes, Parameters, Dates and Severity to be reported.
- One-click access to alarm details including correlated video and trend history.
- Export to Excel.
Importance of monitoring streams

Critical Issue impacting the end users experience

Critical Issue NOT impacting the end users experience
Trial System

- 5 second outage of all 3 programs at the same time (8:45:33) into the Transmitter
- No issues with Physical or Transport layers
GatesAir Opportunity

The expanded ecosystem

- Moving up the food chain to monitor transition points

- Moving lateral to other head ends such as Cable Satellite, IPTV
Burke SNMP Integration
Transmitter Facilities Control

- Monitor and control - Transmitters, power & security systems, environmental parameters, tower lighting and other critical site systems.
- Receive alarms and performance reports wherever you are.
- Identify degradation before failures can occur.
- Manually or automatically activate backup systems.
- Minimize off-air time / maximize ad revenue.
- Avoid costly visits to remote sites.
Direct access to Status, Meters, Commands and more

Anytime, Anywhere

Smartphone  Web  Computer

Create  Transport  Transmit Television  Transmit Radio
Single Screen Facility Control
Thank You

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