Tektronix®

Video Quality Monitors

Sentry Edge Datasheet

Sentry Edge™ provides critical monitoring at the edge of your network and offers specific reporting and alerting capabilities for services in the RF domain.

Key features

- Scalable RF monitoring (64/256QAM / 8VSB)
- Historical reporting and graphing
- Designed for large deployments
- Intelligent tuning
- Alert filtering and resolution tracking

- Integration with Sentry, Sentry Verify, and Medius Units provides comprehensive view of network health
- Dual tuner configuration to monitor all RF channels efficiently
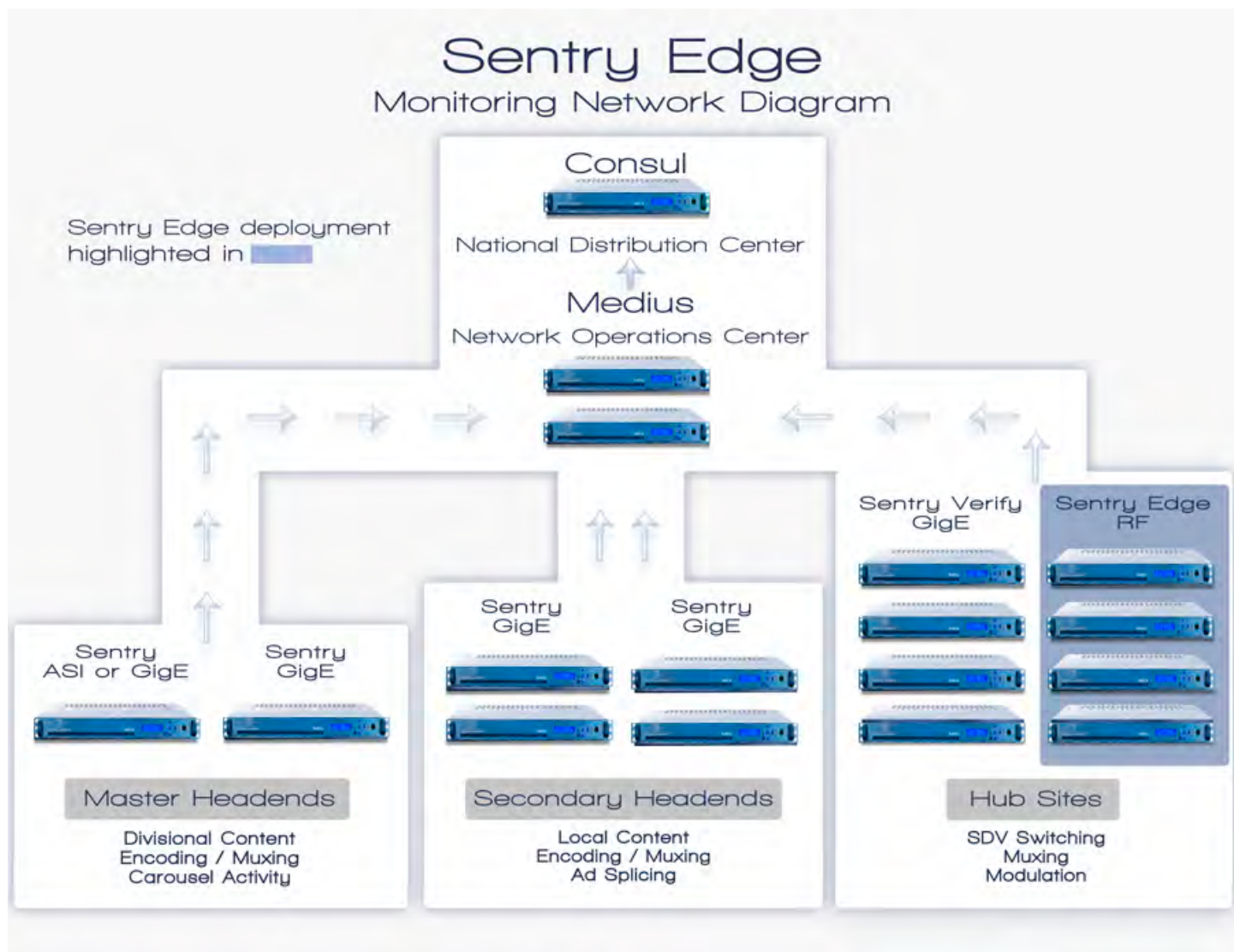- Error second and program availability reporting

Applications

- Monitor linear broadcast programs
- Be alerted to RF and TS errors
- Generate historical and trending reports
- Program statistics and availability reporting

Video quality monitoring with Sentry Edge

Sentry Edge extends the visibility into Transport Stream quality by detecting Transport Stream and RF modulation errors at the edge of the network. Correlate reports and conduct comprehensive, cross-layer, root-cause analysis across locations.

Sentry Edge is a cost-effective solution for large-scale deployments to hub sites and other remote locations. It offers the ability to add additional service monitoring capabilities such as QoE, EBIF, ad insertion, tru2way™, and much more. A compact 1RU rack-mounting footprint with dual tuners allows for efficient monitoring of all RF channels.

Sentry Edge is part of the Sentry family S2E (Source-to-Edge) monitoring solution, which provides the most comprehensive 24/7 real-time monitoring system with a 60-day historical database, executive reports, and trending analysis capabilities. It can be easily integrated with Medius to provide a seamless monitoring package.

Sentry Edge
Monitoring Network Diagram

Sentry Edge deployment highlighted in [ ]

Consul
National Distribution Center

Medius
Network Operations Center

Sentry Verify GigE

Sentry Edge RF

Sentry GigE

Sentry GigE

Sentry ASI or GigE

Sentry GigE

Master Headends
Divisional Content
Encoding / Muxing
Carousel Activity

Secondary Headends
Local Content
Encoding / Muxing
Ad Splicing

**Hub Sites**
SDV Switching
Muxing
Modulation

Sentry Edge monitors the edge of the network just before content is sent to subscriber homes. Typically operators use Sentry to validate the video and audio quality (QoE) of their digital content in the video headend, Sentry Verify to report on video-over-IP transport issues on the programs that are received downstream at the hub sites, and Sentry Edge for monitoring services post QAM.

Software options

Ad insertion (DPI)

Digital ad insertion technology allows multichannel service providers to offer advertisers market segmentation that broadcast networks cannot. Maximizing this advantage requires integrating a complex system of ad insertion technology into an existing network. Today, an average of 2% of digital advertisements fail to air or air incorrectly due to scheduling, insertion, and other errors. In addition, advertisements often suffer the same audio and video quality issues that plague regular programming. As a result, monitoring and auditing capabilities are critical to successful ad delivery.
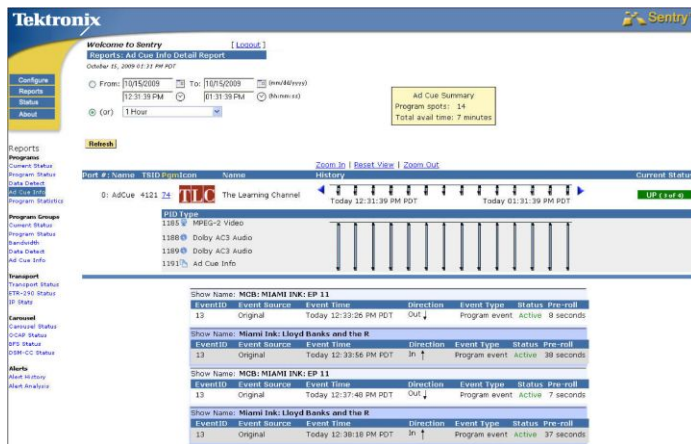

Monitoring Ad Insertion

The Sentry suite of products provides the most complete digital ad insertion monitoring solution by combining real-time monitoring and alerting with historical auditing across the entire channel lineup in all advertising zones. The Sentry product line delivers extensive data that improves digital ad insertion on any platform, allowing engineering teams to ensure proper function of insertion technology by identifying and correcting system errors when they occur. In addition, the ad insertion verification capability allows ad sales groups to provide higher levels of customer service, resulting in greater revenue potential. Using the web-based interface you can monitor digital ad insertion across your entire network. By strategically placing Sentry or Sentry Verify in each of your ad zones, you can monitor and be alerted on all insertion opportunities network-wide, as well as issues that arise from problems.

Carousels tru2way™ / OCAP/MHP / DSM-CC

The OCAP Monitor is a tool for monitoring tru2way™/OCAP carousels. Digital set-top boxes receive continuous delivery of applications and data from the headend or uplink center. These data and applications are critical for normal set-top box function and service delivery.

With the advent of tru2way™ (OCAP) and other carousels, multichannel service providers are introducing a vast array of complex, interactive services to their subscriber base. Monitoring the carousel activity is essential to ensuring the quality and consistency of experience for subscribers.

Sentry Edge supplies detailed reports of carousel performance and activity based on their real-time behavior and data output. Service providers are able to identify the root cause of errors and make necessary changes to eliminate issues and guarantee rapid application deployment. The reports show detailed source and file structures and carousel changes in real time while observing streaming metrics such as cycle time, bandwidth utilization, and stream packet continuity. Real-time alerting notifies users of critical situations, enabling them to resolve issues such as outages, cycle-time fluctuations, and unauthorized changes.
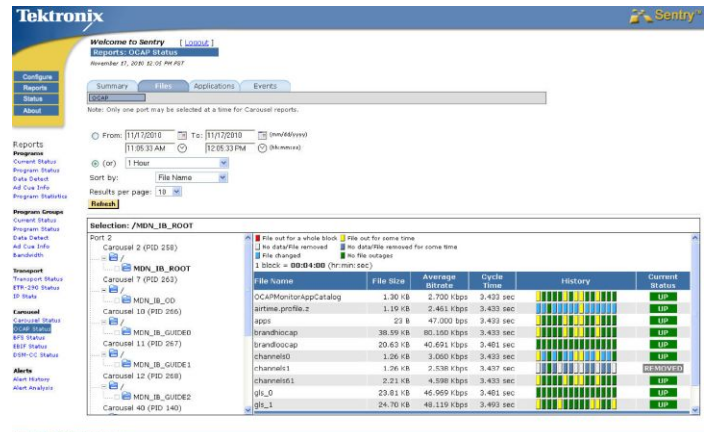
Monitoring tru2way™/OCAP Carousels

EBIF monitoring

Interactive applications and associated advertising allow you to deliver enhanced capabilities to your subscribers and monetize advanced digital services in a broad range of digital set-top boxes. eTV content consisting of the applications and metadata is, however, prone to errors during transport, rate-shaping, and muxing. Old video-over-IP metrics such as MDI and Continuity Counter (CC) errors are incapable of detecting any content errors, especially with eTV.
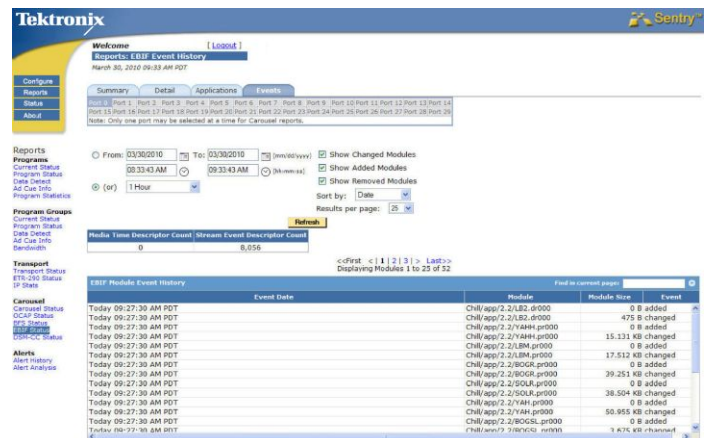
Monitoring EBIF/eTV

The EBIF/eTV monitoring solution breaks down and reports on eTV application data and critical signaling information, so service providers can be assured they are delivering the best possible quality of experience for their subscribers. In addition, a 60-day application-level historical report (available by service and by location) provides critical trending information about eTV delivery. Tailored alerting and dashboards provide proactive eTV monitoring and fast troubleshooting.
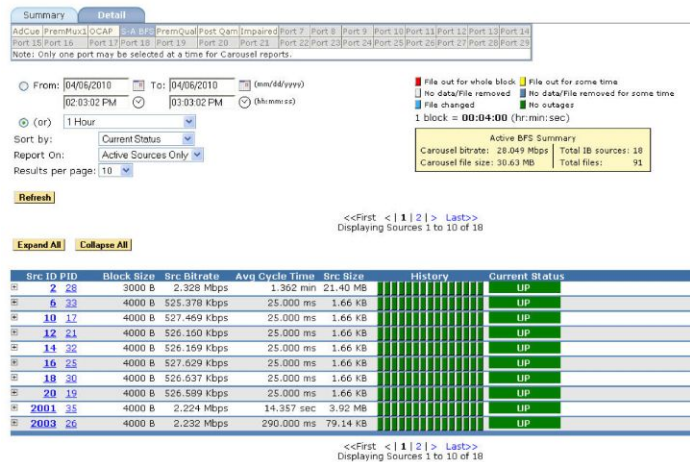
QoE monitoring

When monitoring 8VSB channels in the clear, Sentry Edge can be upgraded to perform Quality of Experience (QoE) monitoring. The QoE module scores the video and audio based on customer impacting events such as frozen video, loss of audio, tiling, audio level issues, etc. The scores are based on human perceptual analysis of hundreds of audio and video PIDs (in monitored programs) simultaneously in real time. Should issues arise that affect the quality of the viewers' TV viewing experience, the score is reduced.

The magnitude and duration of the score reduction is based on an analysis that includes the position of the error on a viewer's screen, the duration of any reduction in quality, and the frequency that quality issues occur on a program. The system models these results based on the average TV viewer's reaction into an easy-to-understand, continuously graphed Audio/ Video QoE score chart. In addition, reason codes provide added detail to show the cause of the QoE impairment.

All QoE scores less than 100 on a program indicate that video and audio problems are degrading the actual viewing experience for the viewer. The worse the subscriber experience is, the lower the score becomes.

SA-BFS monitoring

Sentry is designed to identify and monitor data carousels within the transport, which enables it to keep detailed information about the real-time and historical status of the Scientific-Atlanta Broadcast Files System (BFS). Similar to the way other application carousels (tru2way, DSM-CC, etc) are monitored, Sentry is able to provide critical information about the status of BFS carousels. Multichannel service providers can set alerts to be notified of bit rate errors, file changes, file cycle times, and if files are missing.

Monitoring Scientific-Atlanta Broadcast Files System

Audio loudness monitoring

When monitoring 8VSB channels in the clear, Sentry Edge can be upgraded to perform audio loudness monitoring. The ALM module is a subset of the QoE monitoring module and strictly focuses on audio volume discrepancies. The ALM module supports the ITU-R BS.1770 audio level specification and allows service providers to monitor all programs in real time for audio level issues.

Monitoring and reporting on audio volume level issues helps service providers address issues such as varying volume levels on different channels or during commercial inserts. Alerts can be configured to trigger when the audio levels go above or below a specified dB value or dialnorm during a given time period.

The ALM module also helps U.S. service providers comply with the CALM Act.

Characteristics

Platform characteristics

Browser support	Firefox, Safari, and Internet Explorer
Dual tuner	QAM Annex B (ITU-T J.83)
Management port	1000BASE-T Ethernet interface

Supported protocols

HD/SD programs, SPTS or MPTS, multicast (IGMP v3) and unicast MPEG-PSI, DVB-SI, ATSC-PSIP table support, SNMP trap and MIB support

Video	MPEG-2, H.264, H.265 (HEVC), VC-1
Audio	Dolby AC-3 (5.1 Surround)
	MPEG-1 Layer II (Mono, Stereo)
	AAC, HE-AAC, and HE-AAC v2

Physical characteristics

Dimensions	
Height	50.8 mm (2 in.)
Width	432 mm (17 in.)
Depth	381 mm (15 in.)
Weight (net)	9.2 kg (20.2 lb.)
Power supply	100-240 V AC, 50-60 Hz

Environmental characteristics

Max storage temperature	70 °C
Max operating temperature	35 °C
Max humidity	85%

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For Further Information. Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit www.tek.com.

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