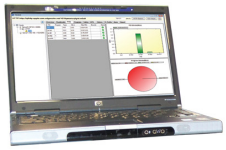
HALO HLS Analyzer

Remote, 24 x 7 Multi-Window Monitoring System and Professional Real Time HTTP Live Streaming (HLS) Analyzer for Validating HLS Formats and Verifying MPEG Transport Stream and Audio/ Video Quality. Suitable for Testing HLS Video Service Infrastructure and Real Time Monitoring of Service Content. Perfect Tool for Monitoring and Analyzing WOWZA, DVEO, Envivio, and Elemental Transcoders.



Features

- Simulates and stress tests 200 HTTP Live Streaming sessions from the same or multiple HLS servers and simultaneously tests the video service in all sessions
- Supports real-time unbounded broadcast service as well as file based on-demand services
- Analyzes playlist files, monitors and records media downloading activities
- Analyzes HLS bitrate, PCR interval and compares downloading time vs. media time
- Supports H.264 video compression standards and multiple audio encoding standards, including MP3, AAC and AAC+
- Supports HLS ZD3 metadata decoding
- Supports HLS with AES-128 encryption and URL tokenization
- Decodes and displays video thumbnails and audio PCM values. Continuously decodes and plays a selected program on a remote PC.
- Displays real time error on overview panel
- Error reports can be exported to text or Excel formats
- Provides stream search function in the overview panel
- HLS quality score with download delay in mind
- HLS URL can be imported directly from text file
- Real-time comprehensive MPEG TS analysis on all HLS services initiated by the analyzer
  - Standard compliance based on MPEG and DVB TR 101 290
  - Bandwidth utilization and PID monitoring
  - PCR bitrate and interval analysis
  - Elementary stream buffer and PTS analysis
  - Real-time PSI/SI table decoding
  - EPG decoding and display, if applicable
- Transport stream error summary with a single quality score
- User defined profile matching
- Configurable thresholds and alarm setting
- Audio/Video loss, frozen frame, and black frame detection
- Automatic error reporting and alarm for sending email or SMS to technicians with easy and flexible triggers
- MPEG transport stream recording and playback
- Remote user-friendly and intuitive user interface
- Database for error logging and after-facts analysis
- Multiple reports on error status, TS snapshots and HLS session activities and media file statistics

Applications

- Monitors live and on-demand HLS service
- Stress test of HLS video servers and network infrastructure
- CDN performance measurement tool

Overview

As smart phones and tablets are getting more popular, more TV programs are consumed by these devices. Content providers estimate as much as 75% of video contents will be watched on devices other than TV sets in the next few years. The most commonly used methods for delivering video services to mobile devices and computers are various media streaming protocols, including RTMP, RTCP, HTTP Live Streaming, and Smoothing Streaming via the Internet.

HTTP Live Streaming (HLS) is an HTTP-based media streaming protocol implemented by Apple Inc. It breaks the overall stream into a sequence of small files, each containing one short chunk of an overall finite or unbounded transport stream. The client app downloads the files using HTTP protocol and resembles the files into a continuous transport stream. Since the downloading uses only standard HTTP transactions, HLS is capable of traversing any firewall or proxy server that lets through standard HTTP traffic, unlike UDP-based protocols such as MPEG over UDP or RTP.

However, using IP network to transport media data can introduce transmission errors such as delay, jitter and packet loss. Video delivered over the Internet which the video provider does not have full control can exacerbate the problem. On the other hand, video transport has strict requirements on timely delivery of the video and audio packets to the receivers. Therefore, it is important for service providers to actively test their media service infrastructure and monitor services real-time to discover and resolve any potential problems quickly.

The HALO HLS Analyzer is designed for verifying the quality of digital audio and video services delivered using the HLS protocol. The system can simultaneously start up to 100 HTTP sessions to download audio and video data from one or more video servers, and perform extensive analysis on HTTP transfer status, HLS file formats, MPEG TS standard compliance, and audio and video qualities in all video services.

The system is designed for 24 x 7 remote operations. All errors detected by the system are saved in the database, along with transport stream snapshots and HTTP downloading statistics. Multiple reports can be generated to summarize the HTTP session and transport stream status over time.

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HLS Session Analysis

The system can be configured to simulate up to 100 video service sessions automatically. It will perform simultaneous HTTP downloading of the playlist and media files in all sessions. All HTTP sessions are monitored and a number of media file and session parameters are recorded in the database, including file name, sequence number, file size, and file downloading time. Various analyses are performed on timing, sequences and media file format and stream bitrates are calculated based on encoded PCR values.

Comprehensive TS Layer Analysis

Because HLS uses a series of short chunks of MPEG transport stream to deliver the video data, the underline stream must be compliant to the MPEG standards. The system will perform comprehensive real-time analysis on the MPEG TS in all HLS sessions, including:

- Standard compliance based on DVB test guideline TR 101 290
- Real-time decoding of H.264 video thumbnails and MP3, AAC, AAC+, AC3 audio PCM
- Bandwidth utilization and PID monitoring
- PCR bitrate and interval analysis
- Elementary stream buffer and PTS analysis
- Real-time PSI/SI table decoding and analysis
- EPG-decoding and display, if applicable

Remote User Interface

The Remote View application can be used to view test results and control the monitoring system remotely. Unlike a typical browser-based web view, the Remote View is a fully featured Windows® application, and dynamically displays video thumbnails and all test results. In addition, it can stream audio and video data from the system to the client PC over an IP network connection, allowing continuous decoding of a video program for visual verification of Quality of Service (QoS).

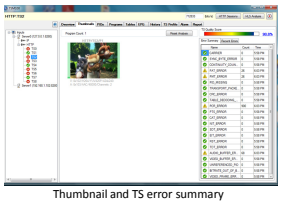
Error Logging and Reports

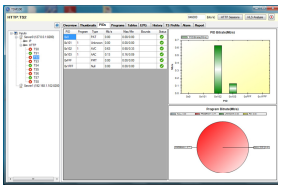
All errors detected are logged in a database. The logging feature allows the operator to search specific errors based on various searching criteria, including error code and time period the error has occurred. Selected errors can be exported to a text file. The HLS Analyzer allows users to create HTTP flow and transport stream profile, and the system will test the actual input data against user entered profile, report and record any deviations. The system can also be configured to send alarm messages to technicians once the overall stream quality is below a certain threshold and/or some specific errors occur. In addition, a number of reports can be generated, including TS and HLS error summary, transport stream snapshots over time, and HLS media file statistics and downloading parameters.

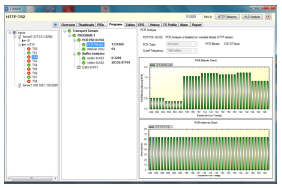
Ordering Information

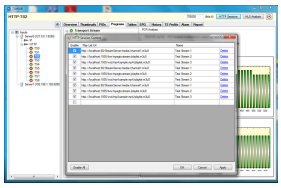
HALO HLS Analyzer
HALO HLS Analyzer-S: Software only
HALO HLS Analyzer-P: Preinstalled in a portable computer
HALO HLS Analyzer-R: Preinstalled in a rack mountable computer

Sample of GUIs


Thumbnail and TS error summary

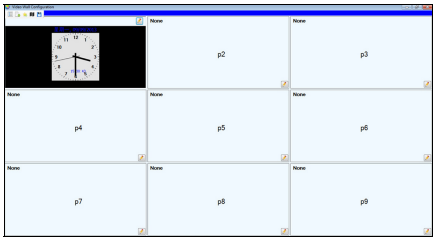

PID analysis


PCR analysis and bitrate calculation

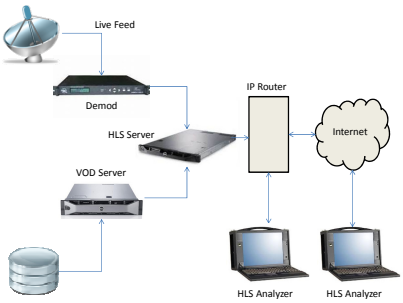

HLS session simulation

Panel Layout GUI

Multi-viewer Configuration:



Application Example



Specifications

IP Input/Output

Interface:	Ethernet (RJ45 or Optical), 10/100/1000 Mbps and 10 Gbps

Administration

Access:	Remote Management

System Requirements

Memory:	4GB DDR2 SDRAM
Hard Disk Drive:	Minimum 100 GB Hard Disk, DVD-RW
Operating System:	Windows® 7

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