IP Multiview System

RADICAL Enlighten

MultiScreen-instrumental monitoring system / multiviewer for UNLIMITED number of TV-and Radio-channels

Stream MultiScreen system is intended for simultaneous visual and instrumental monitoring of multiple video and audio sources in real-time using one or several LCD-panels in poly-screen mode.

Having been based on successful combination of versatile features, which include multi-channel and multi-format abilities and high-level reliability, MultiScreen system has been implemented in the projects of largest Satellite and Cable Head-End operators, TV Channels and OTT operators.

Stream MultiScreen, v. 5

http://www.stream-labs.com

Supported inputs:

Stream MultiScreen server represents an effective media platform, which provides simultaneous visual and instrumental control of unlimited number of TV- and Radio- channels. The number of physical inputs per 1 server depends on the installed input card.

- Composite (NTSC, PAL, SECAM);
- Analog (NTSC, PAL, SECAM);
- SD-SDI (SMPTE-259M, 10 bit, 270 Mbit/s);
- HD-SDI (SMPTE-292M, 10 bit, 1,5 Gbit/s);
- DVB-ASI (ETSI EN 50083-9). Bitrate range 0..214 Mbit/s;
- AES/EBU (24 bit/ 192 kHz) channels;
- DVB-T/T2 (ETSI EN 300 744, 302 755);
- DVB-S/S2 (ETSI EN 300 421, EN302-307, EN301-210);
- DVB-C/C2 (ETSI EN 300 429 Annex A/B/C);
- IP/Ethernet (ETSI TS 102 034).

Video input formats:

- MPEG-1 (ISO/IEC 11172-1);

- MPEG-2 (ISO/IEC 13818-1);

- MPEG-4.2 (ISO/IEC 14496-2);

- MPEG-4.10 (H.264, ISO/IEC 14496-10).

- HEVC (ITU-T H.265 High efficiency video coding)

Audio input formats:

- MPEG-2 Layer II (ISO 11172-3);

- Dolby Digital (E-AC3, AC-3, ATSC A.52b);

- AAC/ADTS/LATM/ADIF (ISO/IEC 13818-7, ISO 14496-3);

- AES SMPTE 302M

Data containers:

- MPEG-2 TS (ISO/IEC 13818-1), MPTS or SPTS;

- DVB T2-MI Streams (ETSI TR 101 290-1, A14-1). **Option** DVB T2MI splitter;

Supported Mobile and Internet streaming (OTT) protocols:

- FLASH RTMP streams (Real Time Messaging Protocol). The support of H.264 video and AAC and MP3 audio streams;

- HLS (HTTP Live Streaming Monitoring); supports encrypted streams

- MMS&MMSH (Microsoft Media Server Protocol & MMS over HTTP);

- RTSP (RFC 1889, 2326, 3550).

Metadata:

- Teletext and Closed Captions (ETSI EN 300 472 , ETS 300 706)

- DVB Subtitles (ETSI EN 300 743)

- EPG (ETSI EN 300 468)

- Digital Program Insertion Cueing Message logging (SCTE-35 over MPEG2-TS)

Supported external events' notification:

- SNMP Trap (RFC 3411-3418, STD0062);

- SNMP Get (RFC 1155, RFC 1212, RFC 1213, RFC 1157, RFC 3411).

Supported Outputs:

- Video: up to 6 VGA, DVI-D, HDMI v.1.3, v1.4(Video+Audio), DisplayPort.

- Audio: 3,5" mini jack, stereo, unbalanced and balanced, S/PDIF, HDMI, Display Port.

- TSoIP. Encoding Mosaic to IP (Optional): MPEG-2 transport stream, H264/AVC, HD up to 1080.

- TSoIP. Encoding Video/Audio from input interfaces(SDI\Composite) to MPEG-2 transport stream, H264/AVC, HD up to 1080.

All measurement errors and clearing are signaled via multiple communication routes:

- On-screen Visualization Alerts

- Audio Alerts

- Visual Alerts in MultiMonitor(State Panel)

- SNMP traps

- Email sending

TSL UMD

Integration of visualization with external devices in accordance with TSL UMD v.5.0 Protocol is implemented. Visual object for UMD, which includes 2 indicators and text box, can be added to visualization mosaics. Control of UMD is carried out by external devices (like TSL TallyMan controller) in accordance with TSL UMD v.5.0 Protocol.

List of Alarms

Reception and displaying of video/audio signals, facilitating instrumental intelligent analysis; and control of input signals for a number of important parameters according to ETSI TR 101-290 (ETR 290) level 1 and 2:

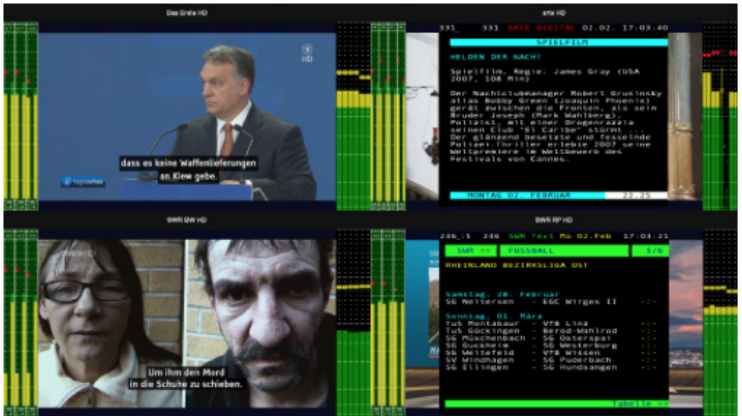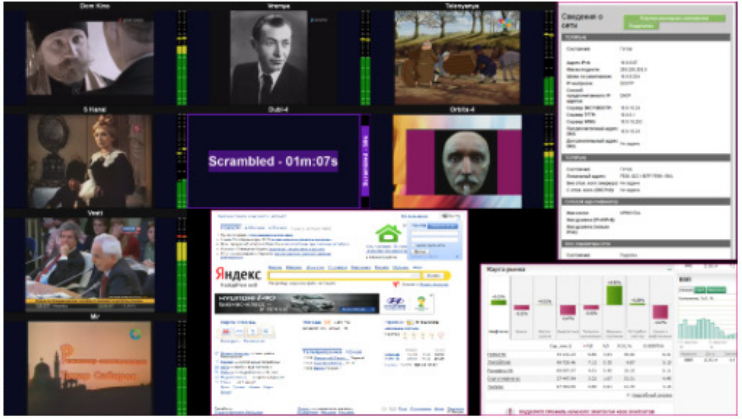|	
No license	HLS Transport error
Low throughput	Sync loss
TR-290 TS_sync_loss	Signal loss
TR-290 transport_error	TR-290 sync_byte_error
TR-290 PAT sections loss	TR-290 PAT sections error
Service lost	TR-290 PMT sections loss
TR-290 PMT sections error	TR-290 CAT sections loss
TR-290 CAT sections error	TR-290 PCR discontinuity indicator error
TR-290 PCR repetition error	PID lost
TR-290 continuity counter error	RTP sequence error
PID scrambled	TR-290 PTS error
PES decoder error	Decoder runtime error
Black video	Frozen video
Video aspect ratio	R-128 Loudness Level
Audio signal level: overload	Audio signal level: silence
Transport Stream Bitrate	Service Bitrate
Teletext page loss	Subtitles Loss
TR-290 EIT Error	TR-290 EIT Actual Sections Loss
TR-290 EIT PF Error	TR-290 EIT Other Error

Example of Mosiac

DVB Subtitles, TeleText, Loudness, Multichannel Audio

Displaying of EPG: EIT Present and EIT Following

Displaying of the content of web pages

Displaying of information about TS on a top of Video:

Service #10303 / 8272kbps
PMT: 5120; PCR: 5121
SDT   SWR BW HD / TV (AC HD)
Stream   1370 / 12kbps
Stream   2171 / 91kbps
Video   5121, AVC / 6940kbps
1280x720(0:0); 50fps
Audio   5122, MPEG-1 / 206kbps
Audio   5123, MPEG-1 / 206kbps
Stream   5124, Teletext / 305kbps
Stream   5125, DVB Subtitling / 26kbps
Audio   5126, AC3 / 477kbps
48.0kHz, 2 channels

Service number and Service bitrate
PID Program Map Table (PMT)
PID Program Clock Reference (PCR)
PID and audio stream codec of the program
PID and video stream codec of the program
Resolution of video stream and FPS
Aspect Ratio
Bitrate of Video stream
Bitrate of Audio stream
Teletext PID and bitrate
DVB Subtitles PID and bitrate

History of Alarms displayed on TV screen

SBTN
TR-290 PAT sections loss
Service lost
TR-290 PMT sections loss
PID lost

RTVI
TR-290 PAT sections loss
Service lost

GEO
TR-290 PAT sections loss
Service lost
TR-290 PMT sections loss

Active Alarm displayed with timer + history inside

Frozen video - 02m:21s
TR-290 PAT sections loss
Service lost
TR-290 PMT sections loss
PID lost
Frozen video

On-screen visualization of Alarms

Black frame - 18m:37s
No stream license - 18m:51s
Frozen video - 18m:36s
TR-290 Continuity counter - 1273
TR-290 Continuity counter - 1321
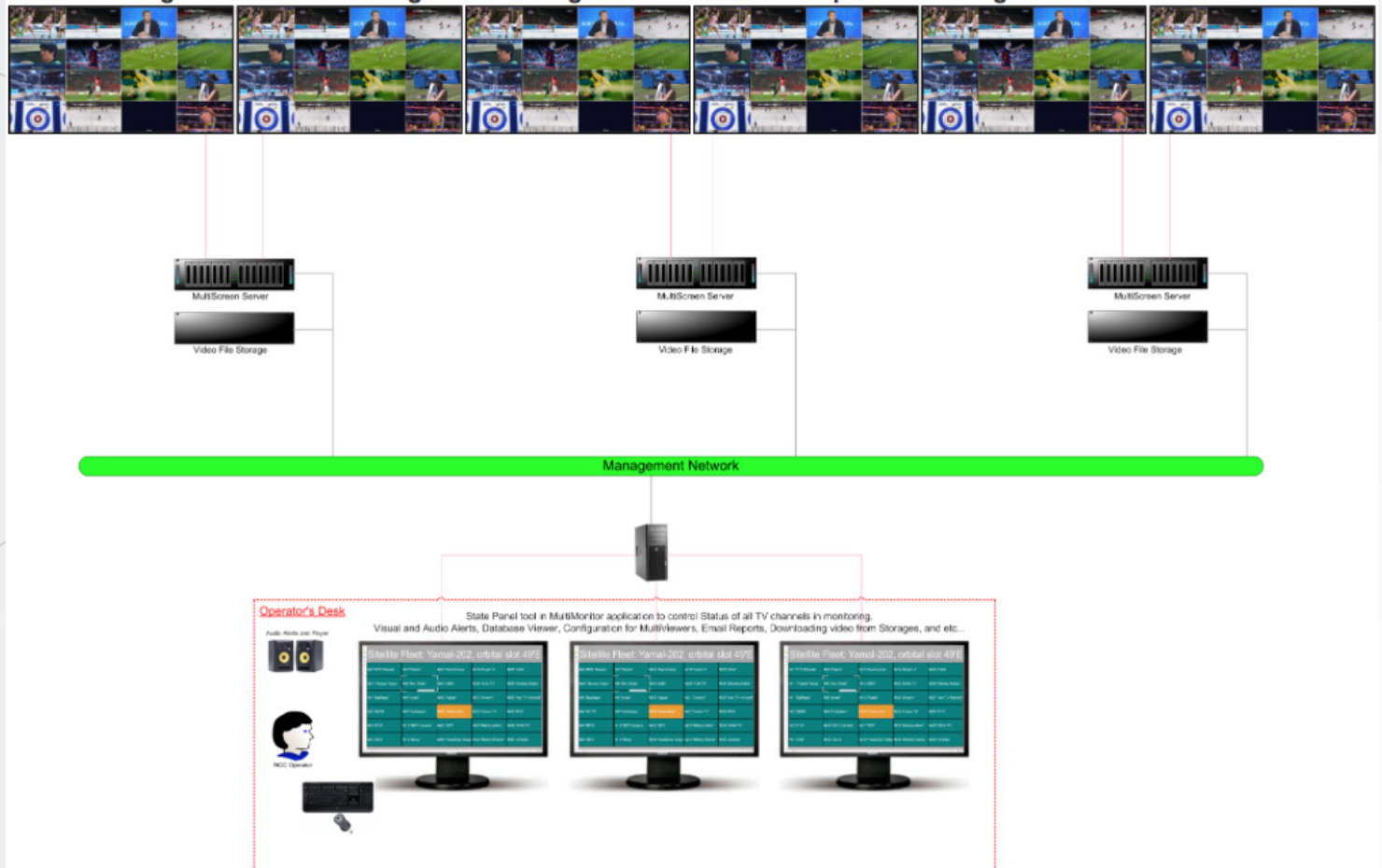TR-290 Continuity counter - 1175
TR-290 Continuity counter - 704
TR-290 Continuity counter - 1706
TR-290 Continuity counter - 1778
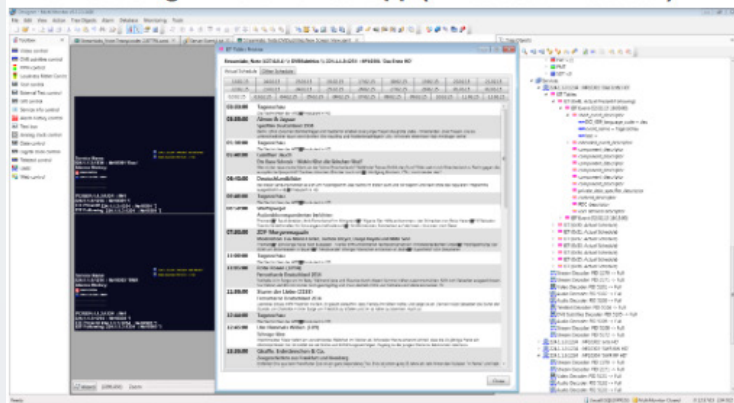TR-290 Continuity counter - 1777
TR290 PCR Discontinuity - 22

This basic diagram shows monitoring and recording of TV channels in compliance with regulations.
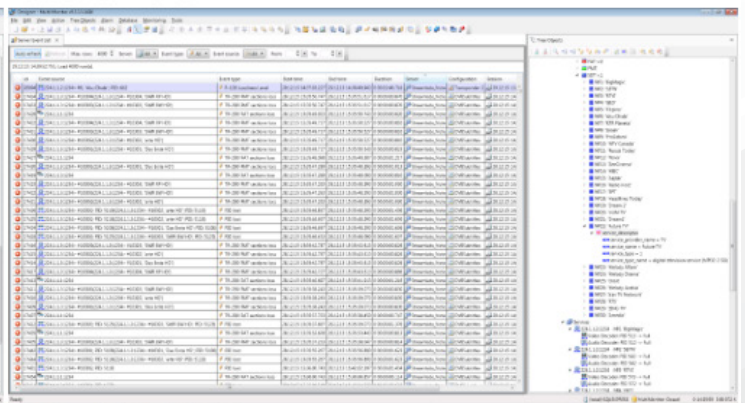

Client application MultiMonitor allows managing of all servers in the network, creating of Screen Views for MultiViewers, loading events from database for preview, watching of channels' statuses, redirecting channels with problems to Penalty Server, downloading video with errors from storage, providing visual and audio alerts to operator, emailing, etc.

EPG Decoding in MultiMonitor app.(EIT tables + Toolbox)   **Database Viewer**

Examples of configured Operator's application MultiMonitor- Statuses of all channels from all servers can be displayed in one MultiMonitor application on Operator's PC.

Integration with MultiRec - Recording system

Stream MultiScreen can work jointly with system MultiRec, crafted for compliance recording. Database for alerts , generated by MultiScreen has been integrated with archive of recordings, produced by MultiRec; and allows downloading of fragments of archive, matching to alerts, straight from MultiScreen application in one click. You may view them later on at your convenience.

Recorders in client application

Downloading video fragment with Error from Storage

Multi-view Server Hardware Datasheet

Processor

Intel® Core™ i7-5820K 6Cores Processor 3.60GHz 15MB Cache LGA-2011(R3)

Motherboard

Supermicro Workstation Board Intel® C612 Chipset Single Socket LGA-2011(R3)

Realtek ALC1150 Hi-Definision 7.1 Audio Built-In

Graphics Accelertor Unit

Nvidia GeForce GTX 950 with 2GB GDDR-5 (2DVi, 1HDMI, 1Display Port)

Memory

ECC Registered DDR-4 SDRAM 16GB(8GBx2) PC-2133..Intel Certified

Storage

1xSSD 2.5inch SATA- 6Gb/s 256GB

Chassis Unit

3U Rackmount Server Chassis 650watt Single Power Supply

Slided Rackmount Rail Kit Include