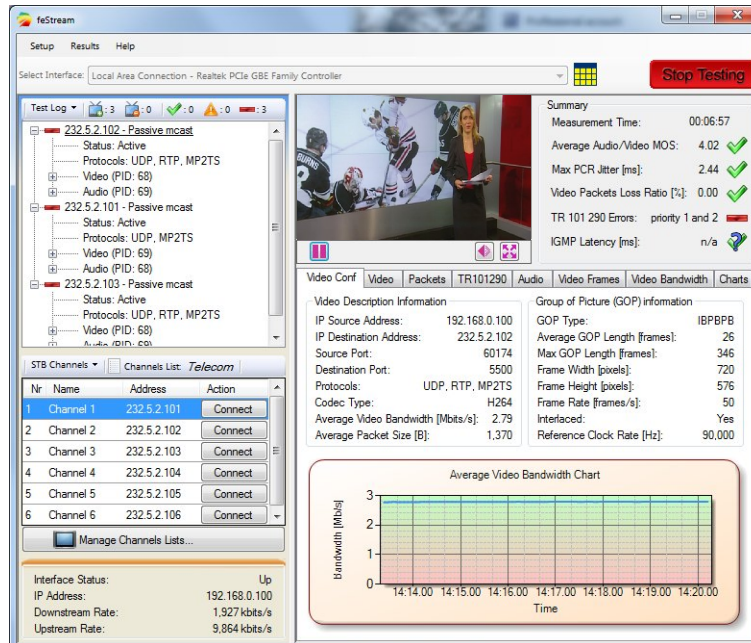# feStream™
IPTV Expert Analyzer

Give your field service a simple way to deploy reliable IPTV services.

Main Features

- Go/no-go results within seconds

- Automatically tests all channels with pass/fail results

- Complete Set Top Box (STB) emulation

- Full Motion Picture video preview

- Accurate audio and video MOS scores and QoE/QoS metrics

- Comprehensive Video and Transport Stream statistics

- Drill into detail to determine root cause of problems

- Summary and detail PDF report generation

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A rapidly growing number of telecom operators are making a profit by offering IPTV services. The allure of profit is driving more startups and operators to join the IPTV industry and it's quickly getting very competitive. More than ever, each operator needs to provide the highest level of service to protect their customer base.

Customers don't care that their video can be impacted by the IP core network, DSL/Fiber modem or STB. However, they do care if their video is frozen, pixilated, or the audio is out of sync. feStream Analyzer allows field service technicians to quickly test and qualify IPTV installations. If the service fails, feStream Analyzer give the technician the tools he needs to probe deeper to determine the root cause. feStream Analyzer transforms your PC into a power IPTV Analyzer that can fully emulate a TV Set Top Box (STB). To emulate a STB, connect the Ethernet port of your notebook computer to the Ethernet port of your xDSL or fiber modem.
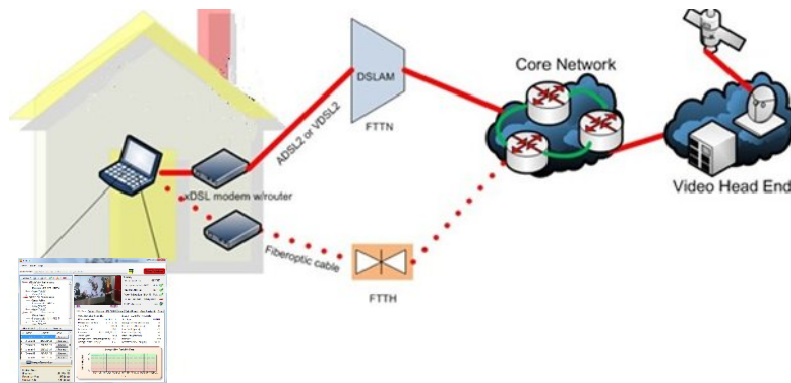
Just click on the "Start Testing" button and feStream Analyzer will automatically synchronize with any multicast IPTV streams detected in the link between the STB and the modem or GPON terminal. VoD unicast streams will be detected during the "sign up" process initiated by the STB Remote Control.

Once a channel is selected for testing, a video preview of that channel begins to run, providing quick assurance that IPTV services are available. However, just watching the video is not sufficient to qualify IPTV services. The IPTV signal could be degrading due to a number of reasons, and the user won't see the effect on their television until the service technician is long gone. The service technician needs to know that the IPTV signal is not being impaired by hidden effects from the IP network, modem, router, STB, CO and more.

feStream Analyzer provides a summary display with several key QoS measurements rated with pass/fail indicators, revealing the true quality of the video stream under test.

The mean opinion score (MOS) is a measurement that results from a complex algorithm that monitors more than 40 parameters in real-time. If the score passes, you can bet the subscriber will get excellent video quality. The Summary of pass/fail indicators is further complemented with a measurement of program clock reference (PCR) jitter, video packet loss, TR101290 (priority 1&2) transport stream errors, and IGMP latency, commonly called "zap time".

Two graphs offer a set of comprehensive user-defined statistics, which guarantee a service technician has all of the necessary IPTV vital signs at their disposal to time-correlate with other results. Additional QoS diagnostics are organized into categories including IP Packet metrics, Transport Stream metrics , Audio-Video metrics and Video Metrics. This comprehensive analysis suite ensures that a technician can quickly verify IPTV service quality or easily resolve issues such as pixilation, frozen screens, slow channel changes, service disruption and more. Further, these metrics enable the technician to know exactly what the user quality of experience will be, even before a STB or TV is connected.

feStream Analyzer can generate test reports for either individual video streams tested, or for all of the video streams tested. All results can be saved to disk as a PDF file so that the service technician can leave with a complete report of all results. The graphical user interface is neatly laid out and allows the operator to select to display only the key parameters which they are interested in seeing.

Specifications

Physical Layers Supported -

10/100/1000 Ethernet, Wi-Fi 802.11 b/g/n

Recognized Video Compression Standards

MPEG2, MPEG4 part 2&10 (H.264)

Signaling Protocols -

IGMP v2/v3

STB Emulation -

PID channel list & multicast address
Channel name
Channel auto scan
Active stream source and destination addresses
Video codec
Stream content (PID with bitstream)
IGMP latency (ZAP time)
Video preview (live full frame)
Simultaneous multiple streams operation

Video Description Information -

IP source address
IP destination address
Source port
Destination port
Protocols
Codec type
Group of picture type
Current GOP length
Average GOP length
Max GOP length
Average gap of I frame
Frame width
Frame height
Frame rate
Is interlaced
Average number of slices in I frame
Reference clock rate

Transport Packets Metrics -

Packets received
    Lost
    Discarded
    Corrected
    Out of sequence
    Duplicated
Lost %
Corrected %
Discarded %
Out of sequence %
Duplicated %
Burst count
Burst loss rate
Average burst length [pkts}
Gap count
Gaps loss rate
Average gap length [pkts]

Video Perceptual Quality Metrics -

Instantaneous absolute MOS
Minimal absolute MOS
Average absolute MOS
Maximum absolute MOS
Instantaneous relative MOS
Minimal relative MOS
Average relative MOS
Maximum relative MOS
Instantaneous audio/video MOS
Minimal audio/video MOS
Average audio/video MOS
Maximum audio/video MOS
Transmission quality:
    EPSNR
    EPSNR(ATIS)
Degradation Factors:
    Lost
    Discarded
    Codec quantization level
    Codec bandwidth restrictions
    Frame resolution
    Frame rate
    GOP length
    Available network bandwidth
    Audio/video synchronization
    Recency

Audio Description Information-

IP source address
IP destination address
Source port
Destination port
Type
Transport protocol
Codec Type
Number of channels
Reference clock

Audio Perceptual Quality Metrics -

Minimal MOS
Average MOS
Maximum MOS
Instantaneous MOS
Degradation factors
    Lost
    Discarded
    Codec
    Recency

MPEG2-TS TR101290 Priority 2 -

Last errors
    Transport error count
    CRC error count
    PCR error count
    PCR repetition error count
    PCR discontinuity error count
    PCR accuracy error count
    PTS error count
    CAT error count

MPEG2-TS TR101290 Priority 1 -

Last errors
    TS sync loss count
    Sync byte error count
    PAT error count
    PAT2 error count
    Continuity error count
    PMT error count
    PMT2 error count
    PID error count

RTP Packets Metrics (Carrying MPEG2-TS)

Packets received
    Corrected
    Lost
    Discarded
    Out of sequence
    Duplicated
    With timestamp errors

Video Jitter -

Frame inter-arrival jitter
I frame inter-arrival jitter
Average frame arrival delay
Peak frame arrival delay

Video Scene Analysis Metrics -

Instantaneous detail level
Instantaneous motion level
Instantaneous panning level
Static image proportion
High detail proportion
Low detail proportion
High panning proportion
Low panning proportion
High motion proportion
Low motion proportion

Jitter Metrics (RFC3550) -

Packet to packet delay variation
Max packet to packet delay variation

LAN Port -

Interface
    Status
    Type
    Speed
    Support multicast
Details
    Physical address
    IP address
    Subnet mask
    Default Gateway
    DNS server
IPv4 statistics
    Received and Sent
        Bytes
        Packets
        Unicast packets
        Packets with errors
        Packets discarded
        Non unicast packets