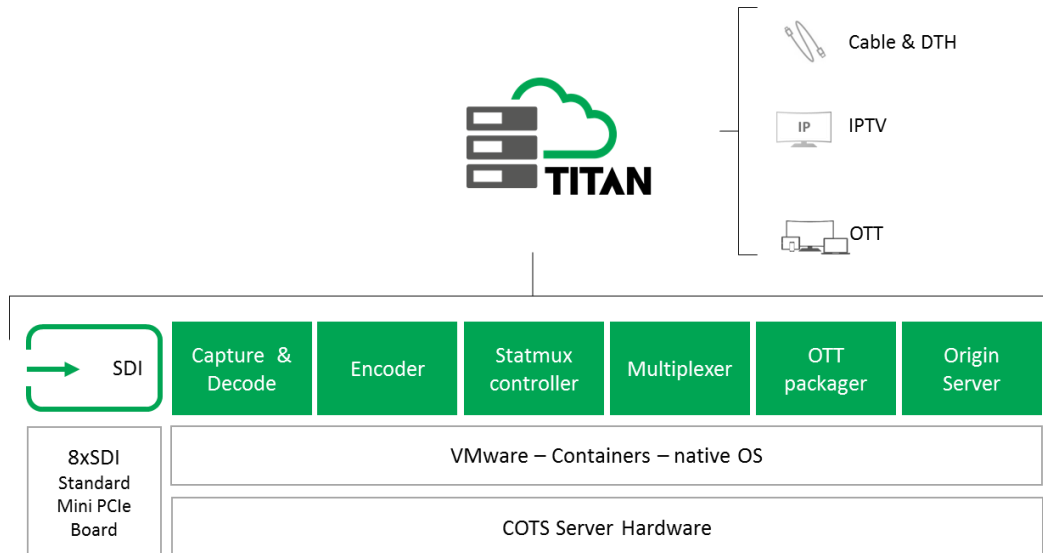


# TITAN Live



## Software-Based Live Video Compression for the Converged Headend

TITAN<sup>®</sup> Live is a high video quality, high density software compression solution, designed for Cable, DTH, OTT Live delivery of SD, HD and Ultra HD content. TITAN Live is a True virtualized software based solution, pure CPU solution, hardware agnostic, running on any OS: Linux, Windows and Virtual Machine.

TITAN<sup>®</sup> Live is based on ATEME 5th Generation STREAM<sup>®</sup> compression engine, delivers the highest video quality at minimum bitrates with accelerated parallel processing.

Addressing main screens and multiscreen applications, from small resolutions up to UHDp60, TITAN<sup>®</sup> Live addresses current and future requirements.

TITAN<sup>®</sup> Live is a complete distribution solution: encoder, transcoder, multiplexer, Statmux, packager and origin.

With powerful user interface, management system and extensive set of APIs, TITAN Live can easily integrate with any ecosystem, reducing time-to-market and OPEX.

### Key features

- High Video Quality – High Density
- Pure CPU solution, Linux, Windows, VM
- Ultra High Density with E3/VCA support
- Mobile to UHD resolutions
- HEVC, H264, MPEG2
- Low-Latency mode
- Channel branding – logo insertion
- Optimized statistical multiplexing over IP
- Flexible Redundancy Scheme 1+1, N+1, N+M

### Benefits

- Increase QAM-network density with High Video quality at minimum bitrate
- OPEX savings, with complete integrated distribution solution
- Reduce data-center CAPEX with software only, high density solution

## Video

### Video Compression

MPEG2 MP@HL, MP@ML  
H264 HP@L4.2, MP@L4.1; 4:2:0/4:2:2 10-bit  
HEVC Main10@L5.1 (UHD)

### Resolutions

UHD 3840 x 2160  
HD 1080 x (1920, 1440, 1280, 960), 720 x (1280, 960, 640)  
SD NTSC 480 x (720, 704, 640, 544, 528, 480, 352), PAL 576 x (720, 704, 544, 528, 480, 352)

### Frame rates

Progressive 59.94, 50, 29.97, 25  
Interlaced 29.97, 25

### Video Processing

Resizer, High quality de-interlacer  
3:2 pulldown/inverse telecine, Frame rate conversion  
Contrast and chroma enhancement  
Image cropping/resizing, Logo insertion

### Video Quality

Psychovisual Filter Enhancements (Object tracking/ Motion masking/  
HVS Quantization adaptation)  
Scene/Flash/Fade/Cross-fade/Stationary detection  
Fully adaptive GOP/reference pictures  
Natural motion tracking (Weighted hierarchical motion estimation)  
Triple-pass rate-control  
Statmux: any codec, any resolution  
Still picture mode

### Encoding bit rate

Up to 50Mbps

### Rate control

CBR, Capped VBR, Statmuxed VBR

### Aspect Ratio

AFD, WSS

### Subtitling/Teletext

WST, SCTE27, Closed Caption, DVB TELETEXT Vchip, OP47, WebVTT  
Teletext/OP47 to WebVTT/DVB-Subtitle conversion

### Metadata/VBI

VPS, VPI, VITC, ATC, SMPTE2031

### Digital Program Insertion

SCTE 35 passthrough  
SCTE35 insertion via SCTE104 triggers  
ESAM (SCC API)

## Audio

### Compression formats

MPEG-1 Layer II  
AAC-LC, AAC-HEv1/v2  
Dolby® Digital, Dolby® Digital Plus  
Sampling frequency: 32, 44.1, 48 KHz  
Dolby® Digital, Dolby® Digital Plus, Dolby-E Passthru

### Audio preprocessing/editing

Any to Any downmix/upmix,  
Loudness control (ATSC A/85, EBU R128)

## Packager

UDP/RTP  
MPEG-2 TS (SPTS & MPTS),  
Apple® HTTP Live Streaming,  
Microsoft® Smooth Streaming (fragmented MP4 PIFF format),  
RTMP  
DASH ISO Streaming format  
HDS  
Multibitrate TS (ATS with EBP)

## DRM

Scrambling with Fixed/Synchronized Rotative Keys Encryption  
DASH CENC, HLS AES 128 CBC, MSS: AES 128 CTR (Playready)  
Interface with leading DRM providers including:  
Microsoft Playready, Verimatrix VCAS, Irdeto, NagraVision  
Vualto, Viaccess-Orca Purple DRM, BuyDRM, Conax.

## CDN integration

Akamai certified  
Compatible with leading CDNs

## Multiplexer

Grooming and remultiplexing  
Stream routing any input – any output  
PID filtering / remapping

## Input Interfaces

### TS/IP Input

UDP/RTP (IGMPv3 multicast, unicast)  
MPEG-2 TS (SPTS/MPTS)  
Video decoding: MPEG-2/MPEG-4 AVC  
Audio decoding: MPEG-1 Layer II, AAC-LC, AAC-HE v1/v2,  
Dolby Digital, Dolby Digital+, Dolby-E

### SDI Input

8x 3G-SDI Mini BNC (SMPTE-424M and SMPTE 425, Level A  
or Level B)  
Audio embedded in SDI

## RTMP Input

## Output Interfaces

4 GbE ports, additional 1 GbE/10GbE ports can be added  
through extension cards

## Configuration and Management

HTML Web Graphic User Interface  
SNMP (MIB v2c) with remote SNMP supervisor  
Northbound REST API<sup>1</sup>  
N+1 Redundancy management via ATEME Management  
System

## Virtualization

Compatible with Virtual Machines/Dockers

## Physical

Guaranteed performance on SMCI, DELL, HP 1RU/blade servers  
Run on any 1-RU COTS server  
Increased density through Intel VCA card