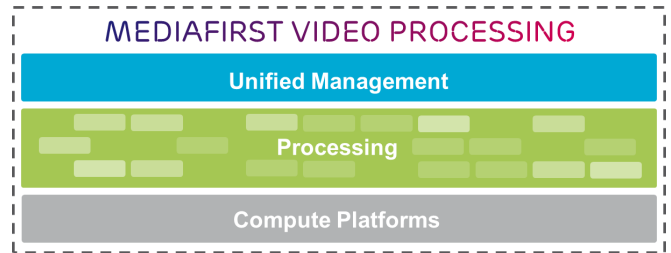


# MEDIAFIRST VIDEO PROCESSING ENCODING



## High Quality Encoding for Any Screen

MediaFirst Video Processing Encoding brings together 25 years of video compression experience to deliver the highest quality, any-screen software applications for live video encoding and transcoding. No matter which compute platform is selected, custom hardware or standard servers, Ericsson's continued investment and focus on the latest compression technologies ensures that the MediaFirst Video Processing Encoding capabilities will deliver the best picture quality over bandwidth in all encoding environments.

## Virtualized and Standard Server Deployments

With its 'Up!' compression mode, MediaFirst Video Processing Encoding for standard server and virtualized deployments improves video quality, saves bandwidth, and future-proofs operations. It offers an IP-centric and IT-oriented approach to video transcoding to all standards, including MPEG-2, AVC and HEVC, and supports traditional set-top boxes as well as Apple iOS, Android and 3GPP smartphones, tablets, PCs with HTML2 browsers, Flash or Silverlight, gaming consoles and connected TVs.

MediaFirst Video Processing Encoding for standard server and virtualized deployments is ideal for any real-time broadcast application, including IPTV, cable, DTH, Internet and mobile. Thanks to its superior IP statistical multiplexing, operators can fit more MPEG-2 or MPEG-4 AVC (H.264) channels within their available bandwidth (up to 4:1 or 5:1 HD for cable or 8 HD channels in a DTH transponder). It also supports advanced services such as ad insertion and content protection for personal devices.

## PRODUCT OVERVIEW

### Extended functionalities

MediaFirst Video Processing Encoding performs all your head end functions in one single product: signal analysis, decoding, video overlay, content replacement, filter & conversion, loudness control, encoding, packaging and encryption. Replace your rack of video production equipment by a single powerful software-based platform!

### Video compression

MediaFirst Video Processing Encoding provides the best video quality for your content in MPEG-2, H.264 and HEVC across all networks and devices. With the "Up!" compression mode, gain more granular control over your video compression settings to achieve the optimal quality.

Ericsson's research into compression algorithms ensures that MediaFirst Video Processing Encoding benefits from continuous video quality improvement. For the same quality and for a given codec, the bandwidth required is reduced each year. This leads to big operational savings! More HD channels per QAM, increasing IPTV eligibility on your DSLAM deployment, reducing the number of satellite transponders or lowering your CDN bill.

### Video Pre-processing

Thanks to its top-end preprocessing filters, MediaFirst Video Processing Encoding improves the quality of the source content to provide the best end user experience:

- The de-blocking, de-ringing and de-noising filters clean up and enhance compressed sources to remove the most visible compression artifacts
- The aspect ratio management dynamically adapts the output to 4:3 or 16:9 aspect ratios when dynamic changes are not supported
- The image settings modify the brightness and color settings
- The de-interlacing, cross-scaling and inverse telecine filters perform advanced conversion from interlaced to progressive video in any resolution. Ericsson's TrueMotion delivers smooth content to OTT players due to the unique progressive image and higher frame rate conversion.

Fully automated pre-processing optimizes the video quality and simplifies the workflow. It automatically configures its pre-processing filters based on input analysis.

## Audio compression and pre-processing

MediaFirst Video Processing Encoding offers the latest standards in audio compression technologies with the support of Dolby Digital, Dolby Digital Plus, High Efficiency AAC and Surround Sound up to 5.1 channels.

It offers a built-in loudness control allowing compliance with loudness regulation standards.

## Integrated tools for video quality monitoring

MediaFirst Video Processing Encoding monitors the MPEG-2 TS ETR 290, using the RTP headers and FEC information to correct input streams and raise alarms in case of anomalies, for both multicast sources in active/active mode.

Furthermore, it has built-in video quality monitoring to ensure that operations are instantly aware of any drop of video quality on any input or output.

## Content replacement

MediaFirst Video Processing Encoding lets you seamlessly switch between video sources at a scheduled time. Operators can now streamline their ad-replacement or content black-out workflows without any glitch.

## Deploy anywhere

MediaFirst Video Processing Encoding can be deployed as an appliance on optimized Ericsson platforms, as software on bare bone servers, or in the cloud as a virtual instance. This gives more flexibility to manage operations and deployment.

Regular software upgrade are available to benefit from continuous processing, workflow and quality enhancements.

### MediaFirst Video Processing Encoding

Use Case	Multiscreen Server Platform	IPTV, Cable TV, DTH/DTT Server Platform
<b>Input<sup>(1)</sup></b>	Support for 3G/HD/SD-SDI or Analog input	
<b>Compressed Input</b>	<b>Type:</b> IP (IGMPv3-based Redundancy and dual multicast redundancy); Dual source redundancy (active/active & active/passive modes); Pro-MPEG FEC support <b>Protocol:</b> MPEG-2 TS (MPTS & SPTS) over IP input <b>Codec:</b> MPEG-2, H.264, AVS+ – MPEG-1 LII, Dolby Digital (AC-3), Dolby Digital Plus (E-AC3), AAC, HEAAC v1 and v2	
<b>Pre-Processing</b>	WSS, AFD, Video index	
<b>Aspect Ratio</b>	WSS, AFD, Video index	
<b>Metadata and VBI</b>	SCTE 104 <sup>(2)</sup> ; SCTE-35; IA 608/708 Closed Caption, DVB Teletext, DVB-VBI; SCTE 27 <sup>(2)</sup> ; VITC, ARIB B39 audio mode	
<b>Image Settings</b>	Brightness, Contrast, Saturation, Hue, Gamma; Temperature	
<b>Enhancement Filters</b>	<b>Video:</b> De-interlacing, Cropping, Letter boxing, Stretching, SD and HD Cross-scaling; 3:2 Pull down; MCTF <sup>(2)</sup> , Deblocking filter <sup>(2)</sup> , Denoising filter <sup>(2)</sup> , Cross Talk filter <sup>(2)</sup> and Smart Sharpening <sup>(2)</sup> <b>Audio:</b> Automatic loudness control (A/85), Audio gain adjustment, Mute	
<b>Image Overlay</b>	Scheduled image insertion; Image insertion on input loss; Logo insertion; Black-out management	
<b>Video Encoding</b>	HEVC Main Profile, H.264 Baseline/Main/High profile, H.263 profile 0; MPEG-4 Part 2 Simple profile, VC 1 Simple/Main/Advanced	
<b>Video Codec</b>	HEVC Main Profile, H.264 Baseline/Main/High profile, H.263 profile 0; MPEG-4 Part 2 Simple profile, VC 1 Simple/Main/Advanced	HEVC Main Profile, H.264 Baseline/Main/High profile; MPEG-2 Main Profile
<b>Rate Control</b>	CBR/Capped VBR/Available bit rate	CBR/Capped VBR/Available bit rate/Statistical VBR
<b>Data Rate</b>	From 10 kbps to 30 Mbps <sup>(3)</sup>	From 128 kbps to 30 Mbps <sup>(3)</sup>
<b>Resolutions</b>	<b>Progressive:</b> from QCIF to 1080p, up to 60 fps <b>Interlaced:</b> 480i, 576i, 720i and 1080i	576i and 480i @ 25/29.97/30 fps; 1080i/p @ 25/29.97/30 fps; 720p @ 50/59.94/60 fps
<b>Multi-stream Output</b>	Common encoding and Adaptive Bit Rate (ABR)	PiP <sup>(2)</sup> : 96x96, 128x96, 192x192



## MediaFirst Video

### Use Case

Multiscreen

IPTV, Cable TV, DTH/DTT

### Audio Encoding

<b>Audio Channels per Service</b>	Up to 4 stereo pairs	Up to 8 stereo pairs
<b>Audio Encoding</b>	MPEG-4/MPEG-2 AAC, HE-AAC v1 and v2, AMR-NB, AMR-WB, Windows Media Audio/Audio Pro, Transcode to Dolby Digital Plus (DD+)	MPEG-4/MPEG-2 AAC, HE-AAC v1 and v2, MPEG 1 Layer II, Transcode to Dolby Digital (DD) and Dolby Digital Plus (DD+)
<b>Pass-Through</b>	MPEG 1 LII, AC-3, Dolby Digital Plus (E-AC3) 5.1-ch or stereo <sup>(4)</sup>	MPEG 1 LII, AC-3, Dolby Digital Plus (E-AC3) 5.1-ch or stereo <sup>(4)</sup>
<b>Data Rate</b>	From 4.75 kbps to 320 kbps (from 64 to 1024 kbps for DD+)	From 32 kbps to 384 kbps and (from 64 to 1024 kbps for DD and DD+)

### Monitoring & Control

<b>Video Quality Monitoring<sup>(2)</sup></b>	MPEG-2 TS input stream monitoring; Output stream monitoring with user-defined qualify thresholds
<b>StatMux monitoring</b>	StatMux pool monitoring: bitrate monitoring per component, list of channels in a pool, channel configuration
<b>Control Interface</b>	Up to 2 IP ports, monitoring and control ports (primary and spare)
<b>Control and Systems Protocols</b>	SOAP, HTTP, NTP, FTP, IGMP v2/v3, SNMP v2
<b>Scalability</b>	Automated node redundancy with MediaFirst Video Processing Management

### Post Processing

<b>Metadata</b>	Thumbnail generation for HLS and Adaptive TS output, Subtitle pass-through, Conversion (WebVTT & DFXP) and Burn-in	Subtitle pass-through, Conversion and Burn-in
	Subtitles pass-through and translation: EIA 608/708 Closed Caption, SCTE-20, DVB Teletext, DVB Subtitles, SCTE-27	Subtitles: EIA 608/708 Closed Caption, SCTE-20, DVB Teletext, DVB Subtitles, SCTE-27
	<b>Ad insertion:</b> EBIF pass-through, SCTE-35 pass-through, insertion, validation using ESAM-based interface and conversion, cross stream prevention	<b>Ad insertion:</b> SCTE-35 pass-through, cross stream prevention
	<b>VITC Timecode:</b> available in all formats	
	Profile-based Blackout from ESAM out of band interface, External Scheduler or SCTE-35 event id-based Live stream switching image and video based on ESAM out of band triggers	
	<b>Nielsen:</b> Watermark extraction for multi-screen devices	
	Seamless stream switching to image/video (based on CableLabs ESAM standard)	
<b>Encryption</b>	<b>AES Encryption:</b> compliant with HLS, PlayReady, Windows Media DRM, Internal or external Key generation with Interface with major DRM and CAS vendors	n/a

### Output

<b>Output Type</b>	Redundant IP outputs	
<b>Output Format</b>	HLS, Smooth Streaming, Flash RTMP, 3GPPv6, ISMA, Adaptive TS (ALD, EBP, IDR or RAP-based signalling), TOT/TDT, SDT generation	DVB, ATSC TOT/TDT, SDT generation

### Compatible Hardware Platforms

<b>Ericsson Platform</b>	Ericsson G6 1052 & 2052 Ericsson G5 1031 & 2031 (For additional feature information, refer to the G5 & G6 datasheets)
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## MediaFirst Video Processing Encoding

### Use Case

**Multiscreen  
Custom Hardware 2**

### Input<sup>(1)</sup>

#### Baseband Input

N/A

#### Compressed Input

**Type:** IP  
Protocol: MPEG-2 TS, (MPTS & SPTS) over IP  
**Codec:** MPEG-2, H.264, MPEG-1 LII, Dolby Digital (AC-3)

## Pre-Processing

#### Metadata and VBI

Closed Captions

#### Enhancement Filters

**Video:** De-interlacing,

**Audio:** Automatic loudness control (A/85), Audio gain adjustment,

## Video Encoding

#### Video Codec

H.264 Baseline/Main/High profile

#### Rate Control

CBR

#### Data Rate

From 150 kbps to 17.5 Mbps

#### Resolutions

Progressive from 288x188 to 1280x720, P50/59.94 High/Main/Base

#### Multi-stream Output

Adaptive Bit Rate (ABR)

## Audio Encoding

#### Audio Channels per Service

Up to 16 audio components

#### Audio Encoding

AAC-LC

#### Data Rate

From 64 kbps to 512 kbps

## Monitoring & Control

#### Control Interface

Up to 2 IP ports, monitoring and control ports (primary and spare)

#### Control and Systems Protocols

HTTP, NTP, IGMP v2/v3, SNMP v1, v2c

## Compatible Hardware Platforms

#### Ericsson Platform

Ericsson Custom Hardware 2 Platform  
(For additional feature information, refer to the Custom Hardware 2 datasheet)

(1) Check platform datasheet for availability (2) Option (3) Depends on codec and resolution (4) TS outputs only

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