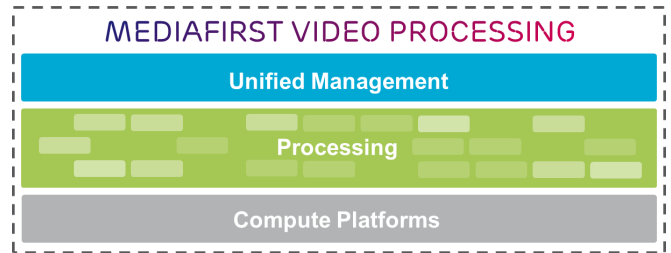




MEDIAFIRST VIDEO PROCESSING ULTRA HD



High-Performance Ultra HD 4K Processing

Ericsson MediaFirst Video Processing Ultra HD is a high-quality video encoding/transcoding solution that offers a new TV experience for end-users desiring to watch ultra-high quality live programming on Ultra HD (UHD) compatible devices. It can encode up to 4K video resolution (4 times HD resolution) in up to 60 frames per second, offers a larger color range with the new BT 2020 standard and can be encoded in 8 or 10 bits. Ultra HD resolution offers significant value to operators looking to deliver premium video services, such as high-profile sports events, in the best possible quality.

Providing an unrivalled user experience, MediaFirst Video Processing Ultra HD is integrated with the latest audio/video technologies, Ultra HD resolutions and supports HEVC (H.265) compression. It also employs a proprietary multiprocessor software approach, distributing HEVC encoding across multiple server nodes to provide the power to perform high quality Ultra HD compression on industry-standard servers. This enables seamless migration to HEVC and cost-effective, scalable deployment in the datacenter and cloud.

HEVC provides the compression efficiency required to distribute 4K TV to the home using existing bandwidth with 30-50% bitrate reduction compared to MPEG-4 AVC (H.264), a key requirement for service providers. Ericsson's unique software-based architecture enables operators to continuously enhance their Ultra HD services, with frequent updates to further improve density and video quality.

PRODUCT HIGHLIGHTS

Higher Resolution and Color Depth:

- Encode Ultra HD up to 4Kp60 using HEVC

High Performance:

- SMPTE BT.709 or BT.2020
- Deployed on Ericsson G5 appliance, with latest generation Intel Xeon IvyBridge processors
- Processing by up to 4 nodes in G5 chassis, depending on configuration

Software Updates:

- Regular updates increase performance of the UHD system

Technology Enhancements:

- Address a bigger color space using 10 bit color coding
- Higher frame rate for increased smoothness

Ingest/Output:

- Ingest any content through Quad HD-SDI 3G link
- Output to any Ultra HD capable device

Premium Quality, Enhanced Experience

Ultra HD creates new immersive experiences with higher resolutions and frame rates as well as a wider color range.

Leveraging the HEVC compression standard, MediaFirst Video Processing Ultra HD is optimized to support 4K using existing bandwidth and distribution bitrates. HEVC promises up to 50% bandwidth or quality gain compared to H.264.

The HEVC codec developed by Ericsson is tailored to provide the highest video quality on any screen. Ericsson's HEVC implementation is based on the latest HEVC standard (12.1), facilitating compatibility with multiple decoders.

The Ultra HD encoder leverages Ericsson's experience in developing previous codec standards including MPEG-4 AVC (H.264) and MPEG-2.

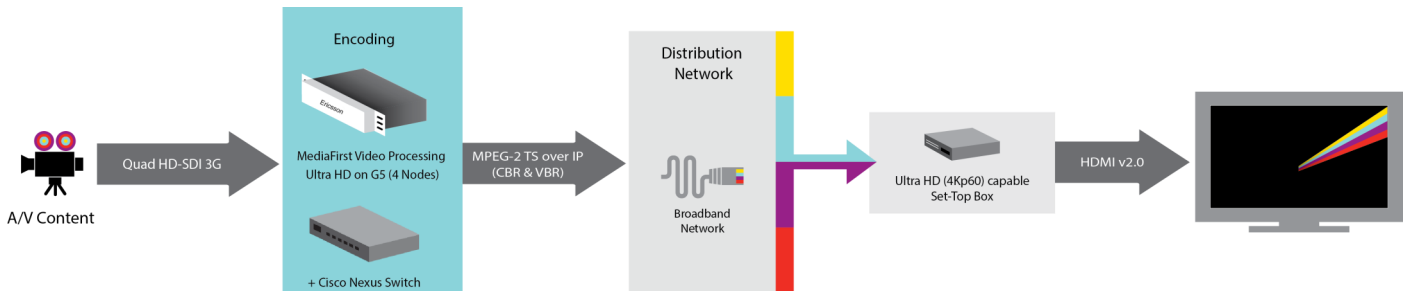
Premium Hardware

Processing Ultra HD resolutions using HEVC compression requires powerful hardware and high data transfer capabilities. These two requirements are met using our Ericsson's G5 2000 Series platform and a 10Gb switch. The G5 is a 2RU server with 4 nodes (motherboards) linked by software to provide the power needed to encode Ultra HD resolutions.

The high-performance Ericsson G5 platform is designed to support HEVC tools and enable high quality, low bitrate encoding, for Ultra HD resolutions with up to 60 frames per seconds and a 10 bit color range.

Ultra HD workflow

MediaFirst Video Processing Ultra HD ingests 4K live video signals through its quad HD-SDI 3G card. Once ingested, each picture is distributed for encoding across server nodes. After the encoding phase, the stream is output using an MPEG-2 TS over IP (CBR & VBR) to a 4K HEVC set-top box that will decode it. The stream is then sent through HDMI v2.0 to a 4K TV set for display.



Ericsson MediaFirst Video Processing Ultra HD Specifications

Input

Baseband Input

Quad 3G/HD-SDI input⁽¹⁾

Pre-Processing

Metadata and VBI

IA 608/708 Closed Caption

Image Settings

Brightness, Contrast, Saturation, Hue, Gamma; Temperature

Enhancement Filters

Video: MCTF⁽²⁾, Deblocking filter⁽²⁾, Denoising filter⁽²⁾, Cross Talk filter⁽²⁾ and Smart Sharpening⁽²⁾

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

Image Overlay

Scheduled image insertion; Image insertion on input loss; Logo insertion; Black-out management

Video Encoding

Video Codec

HEVC Main & Main-10 profiles

Rate Control

Constant bit rate

Data Rate

From 5 Mbps to 40 Mbps

Resolutions

2160p / 1080p x 25/30/50/60 fps

Audio Encoding

Audio Channels per Service

Up to 4 stereo pairs

Audio Encoding

MPEG-4/MPEG-2 AAC, HE-AAC v1 and v2, Transcode to Dolby Digital Plus (DD+)

Pass-Through

Dolby Digital (AC-3), Dolby Digital Plus (E-AC3) 5.1-ch or stereo

Data Rate

From 64 to 1024 kbps for DD+

Monitoring and Control

Control Interface

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

Control and System protocols

SOAP, HTTP, NTP, FTP, IGMP v2/v3, SNMP v2

Scalability

Automated node redundancy with Ericsson MediaFirst Video Processing Management

Output

Output Type

Redundant IP outputs

Ericsson G5 Platform Specifications

Monitoring and Control

Control Interface

Dual Gb Ethernet, monitoring and control ports (primary and spare)

Interfaces for Software

Baseband Input

2x Quad HD/SD-SDI
4K ingest compatible with SMPTE ST 425-1 Level A Standard

IP Input / Output

4x16 Gb + 2x10 Gb Ethernet port

Physical and Power

Form Factor

2RU

Dimensions (chassis)

3.46" (87.9 mm) x 17.24" (438 mm) x 30.35" (733 mm)

Full Chassis Dimensions (H x W x D)

3.46" (87.9 mm) x 17.24" (438 mm) x 31.69" (805 mm), including bezel and power supply latches

Chassis Weight

Fully configured (2 PSU, 4 nodes) 65.5 lbs (30 kg)

Power

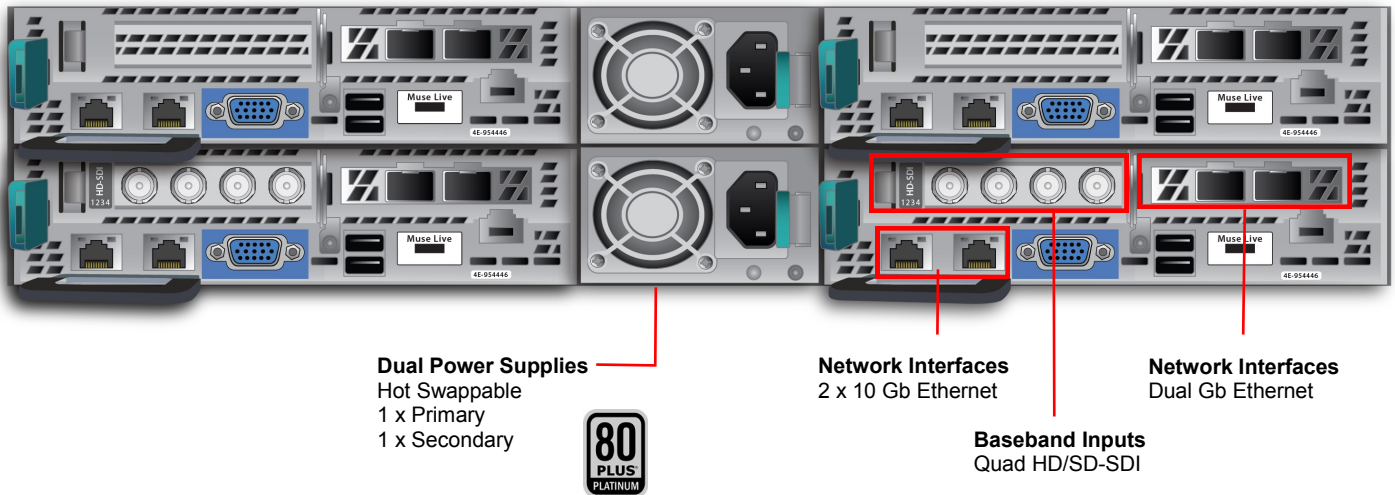
Input: 100-240 VAC auto-ranging or -48 to -60 VDC
Consumption: 310 W per node (1240 W total)
Heat dissipation: 1058 Btu/hr per node (4231 Btu/hr total)
Power supplies: dual load-balancing hot-swappable power supplies

Environmental

Operating temperature: 50 to 95° F (10 to 35° C)
Storage temperature: -40 to 158° F (-40 to 70° C)
Storage humidity: 50 to 90% non-condensing with a maximum wet bulb of 82° F (28° C)

Agency Certifications

FCC Class A, CE, cTUVus, CB, VCCI, KCC



Dual Power Supplies
Hot Swappable
1 x Primary
1 x Secondary



Network Interfaces
2 x 10 Gb Ethernet

Network Interfaces
Dual Gb Ethernet

Baseband Inputs
Quad HD/SD-SDI

Cisco Nexus 3524 Switch Specifications

Physical and Power

Connectors

24 fixed SFP+ ports (1 or 10 Gbps); expandable to 48 ports
Dual redundant, hot-swappable power supplies
Four individual, redundant, hot-swappable fans
One 1-PPS timing port, with the RF1.0/2.3 QuickConnect connector type
Two 10/100/1000-Mbps management ports
One RS-232 serial console port
One USB port
Locator LED + Locator LED button

Management

Two 10/100/1000-Mbps management ports

Performances

480-Gbps switching capacity
Forwarding rate of 360 mpps
Line-rate traffic throughput (both Layer 2 and 3) on all ports
Configurable MTUs of up to 9216 bytes (jumbo frames)

Form Factor

1RU

Dimensions (chassis)

1.72" (436 mm) x 17.3" (439 mm) x 18.38" (467 mm)

Chassis Weight

17.4 lbs (7.9 kg)

Power

Input: 100-240 VAC auto-ranging or -48 to -60 VDC
Consumption: 310 W per node (1240 W total)
Heat dissipation: 1058 Btu/hr per node (4231 Btu/hr total)
Power supplies: dual load-balancing hot-swappable power supplies

Environmental

Operating temperature: 32 to 104° F (0 to 40° C)
Storage temperature: -40 to 158° F (-40 to 70° C)
Storage humidity: 5 to 95% noncondensing

(1) Check platform datasheet for availability (2) 8-bit option (check performance)

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