

# MediaKind Encoding On-Demand

## The Inspired Solution for Increased Video On-demand Processing

MediaKind **Encoding On-Demand** is a **fast, high performance file based transcoding solution**.

Encoding On-Demand capabilities are fine-tuned for compelling premium services, such as video on-demand (VOD) and catch-up TV, and for delivery to a full range of devices.

Able to process standard definition content at a rate of 25x real time, Encoding On-Demand is one of the fastest true software based transcoding solutions on the market. While other solutions may require specific hardware acceleration to achieve these same speeds or quality, our **exceptional processing speed is directly built-in to the application**.

Our all-software solution means future enhancements are just an update away. It also means that the Encoding On-Demand can excel in almost any environment: on bare-metal servers, in a virtual environment, or in the private or public cloud.

Encoding On-Demand is part of the MediaKind Video Processing suite of high-quality media processing applications designed to satisfy a range of business **solutions across the media value chain** and provide **maximum flexibility** for Service Providers, Operators and Broadcasters



## Deliver a Premium Experience

### Quality-Enhanced Transcoding

Encoding On-Demand integrates with unique **in-house codecs**, tailored to provide the highest video quality on each device, from ultra HD in 4K to mobile resolutions.

Encoding On-Demand offers a variety of video quality presets to provide a premium experience and volume transcoding. Encoding On-Demand implements multiple, **advanced adaptive pre-processing** techniques that prepare input while keeping the video sharp: motion compensated temporal filter (MCTF), de-blocking, advanced de-interlacing, adjustable resolutions, aspect ratio management, advanced scaling capabilities, and more.

With Encoding On-Demand we bring the future of immersive experience. We offer ultra HD capabilities, with a wider color space and 10 bit encoding in HEVC. Encoding On-Demand is also compatible with high dynamic range (HDR) technologies. Deliver constant video quality with VBR for OTT by adapting bandwidth allocation to actual complexity, per segment, in order to prevent over-allocating.

Provide a richer audio and home theater experience. Encoding On-demand checks and adjusts incoming sound levels, and carries up to eight audio tracks per channel. Dolby Digital +, Dolby Digital 5.1 and Dolby Atmos are supported.

## Benefit from the Best-In-Class

### Advanced Processing

Encoding On-Demand enables contribution ingest, in part thanks to IMF ingest transcoding capabilities allowing content to flow seamlessly from the studio to your distribution channels.

We focus on **optimizing quality and speed**. Our research and development teams have successfully created one of the fastest, high-quality file-based transcoders available today. Our product can **encode files in 25x real time** (depending on the number of output and resolutions required).

Additional advancements include partial source transcoding that leaves portions of any unwanted video out. These unique functions allow service providers to make catch up TV assets available to viewers almost immediately after the live broadcast.

Optimize metadata and monetize your assets by taking full advantage of ad placement opportunities. With advanced video and audio conditioning, Encoding On-Demand uses SCTE-35 cue point external metadata to ensure a smooth transition from content to external ads.

## Deploy Seamlessly

### Centralized and Simplified

The system is fully compatible with IT automation tools and runs on Linux CentOS.

Although available as a standalone component, the solution is **highly scalable**. Thanks to distributed micro-services Encoding On-demand is entirely cloud ready. Solution control and licensing management is centralized through a single access point.

Our Encoding On-Demand application works to its full potential when combined with other MediaKind products.

MediaKind products in the Content preparation solution:

- MediaKind Management Controller
- MediaKind Packaging
- MediaKind CMS
- Video Storage and Processing Platform

## Automate the Work Flow

### Dynamic Load Balancing

The MediaKind load balancing capabilities are an essential component of the MediaKind Video Processing solution. Automated workflows and load balancing are easily managed. Resources are requested based on actual needs at the time. Entirely scalable, Encoding On-Demand load balancing ensures automatic and accurate allocation of transcoding and processing resources. These features are key to transforming the maximum amount of content in the least amount of time.

Our integrated load balancing allows you to optimize your transcoding farm for best use.

## High Availability

- MediaKind Encoding On-Demand load balancing features offer a number of mechanisms that ensure high availability: the **Built-in 1+1 redundancy** maintains the current job list even in the event of a Controller loss.
- Smart balancing for optimized resource usage

## Increase Performance

### G8 Platform

- **1RU, 2RU** (4 nodes)
- Optional 10Gb interfaces on 2RU
- Designed to transcode UHD ABR
- Versatile and scalable

## Streamline Your Process

### Cover the Whole Processing Chain

Encoding On-Demand open interfaces (REST-based) are designed to ease the integration with your existing ecosystem (CMS, workflow manager, packagers, etc...) every time needed.

Alternatively, MediaKind portfolio offers the full suite of products that covers the whole processing chain, from ingest to delivery:

- MediaKind Content Management System for assets and workflow management which can trigger third party components for video quality check for instance.
- MediaKind Packaging and Video Storage & Processing Platform for storage and packaging.

## Specifications

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

<b>Input protocol</b>	AWS s3, sftp, ftp, cifs, nfs, any protocol that can be mounted on linux operating system
<b>Input file types</b>	A/V files: MPEG 2 TS (MPTS and SPTS), MPEG 2 PS (.ts, .mpg, .mpeg, ps, .vob), MPEG 4 (.mp4, .m4v, .f4v), MXF OP1-a, Quicktime (.mxf, .mov)
<b>Input audio and video codecs (decode)</b>	<b>Video:</b> MPEG 2 SD/HD, MPEG 4/AVC (H.264) SD/HD, HEVC 8/10 bits SD/HD/UHD (H.265), IMX, XDCAM (HD & EX), HDV, DV, XAVC, AVC-Intra, ProRes, DVCPRO HD SD/HD, JPEG2000, v210 HDR Ingest: PQ10, HDR10, HLG10, HLG10 backward compatible <b>Audio:</b> MPEG 1 Layer II, AC3, E-AC3, AAC, HE AAC and HE ACC v2, PCM, LPCM
<b>Output file format</b>	MPEG 4 and Flash (.mp4) MPEG 2 TS (.ts)

<sup>(1)</sup> Check standard server datasheet for availability.

### Pre-Processing

<b>File processing</b>	Progressive ingest, partial file processing
<b>Aspect ratio</b>	WSS; AFD; Video Index
<b>Metadata and VBI</b>	IA 608/708 Closed Caption; DVB Subtitling, Teletext, SCTE-27, ARIB B.24
<b>Image settings</b>	Brightness; Contrast; Saturation; Hue; Gamma; Temperature
<b>Enhancement filters</b>	<b>Video:</b> De-interlacing, cropping, letter boxing, stretching, 3:2 pull down, 6:4 pull down, MCTF and spatial denoising <sup>(2)</sup> , MPEG 2 deblocking <sup>(2)</sup> and smart sharpening <sup>(2)</sup> , cross talk filter <sup>(2)</sup> <b>Audio:</b> Loudness Control, audio gain adjustment, mute

<sup>(2)</sup> Options

## Video Encoding

	H.264	HEVC	MPEG-2
Video encoding	Baseline/Main/High to HD resolutions 3 encoding presets (ultra-fast, fast, high quality)	8/10 bits to UHD resolutions 3 encoding presets (ultra-fast, fast, high quality)	MPEG-2 Main to HD resolutions 2 encoding presets (high quality, fast)
Rate control	CBR/VBR multi-bitrate with GOP alignment for adaptive bitrate formats	CBR/VBR multi-bitrate with GOP alignment for adaptive bitrate formats	CBR multi-bitrate with GOP alignment for adaptive bitrate formats
Data rate	From 20 kbps to 50 Mbps	From 128 kbps to 120 Mbps	From 256 kbps to 40 Mbps
Resolutions	Ranging from 80x64 to 1920x1080 (1080p) From 50/60 fps to sub-framerate Custom resolutions	Ranging from 80x64 to 4096x2160 From 50/60 fps to sub-framerate Custom resolutions	Ranging from 96x96 to 1920x1080 (1080p)
Multi-stream output	Multi-profile output including mix of H264 and HEVC, interlace and progressive encodings		

## Audio Encoding

Audio channels per service	As per licensed authorizations
Audio encoding	MPEG-4/MPEG-2 AAC, HE-AAC v1 and v2, MPEG-1 Layer II, MPEG 2 Layer II Dolby Digital (AC-3), Dolby Digital Plus (E-AC3) 5.1-ch or stereo
Pass-through	MPEG-1 Layer II, MPEG-2 Layer II, Dolby Digital (AC-3), Dolby Digital Plus (E-AC3) 5.1-ch or stereo, Dolby Atmos
Data rate	From 32 kbps to 384 kbps

## Post Processing

HDR	PQ10, HDR10, HLG10, HLG10 backward compatible, passthrough and conversions supported Tone mapping (HDR to SDR) and Inverse tone mapping (SDR to HDR)
Subtitle	EIA 608/708 closed caption, DVB Subtitling, Teletext, SCTE-27, ARIB B.24
Metadata	SCTE-35 pass-through (in-band), SCTE-35 cue point creation (out-of-band)
Dynamic ad insertion	Dynamic ad insertion workflow support from CMS metadata provisioning: assets are conditioned for pre/mid/post roll and cue point metadata are inserted

## Monitoring and Control

Access	Web UI, API, User profiles and rights management
Alarms	Web UI, SNMP Traps
Control	REST API: Job management, Service configuration, Statistics
Monitoring and logs	Encoding farm jobs monitoring, service jobs, job logs
Reports and stats	Encoding farm reports: Date range selection, token usage, jobs processed, encoded duration and volumes, Export data to CSV, Service stats
Reliability	High availability with MediaKind load balancing (1+1 active - active) Save/Restore configuration

## Deployment Models

Standard servers	MediaKind G8 (1U and 2U)
Software only	Guaranteed performance on HP BladeSystem and Cisco UPS blades <sup>(3)</sup>

<sup>(3)</sup> For more details contact MediaKind

## Hosted Balancing

Load balancing is hosted on the encoder server	No additional load balancing servers required
Manage pools	Manage pools of encoders from a single access point

## External Interfaces

Interface to MediaKind On-Demand Encoding	REST API for up to 150 managed devices
Interface to Content Management System (CMS)	REST API to job provisioning system

## Encoding Configuration Management

Format type	JSON
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## Encoding Job Management

Encoding job distribution	Priority management (10 levels) Encoding job status notification by REST Partial encoding Interface with CMS
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