Maximizing Video Efficiency: Optimizer Live for Video Streaming Savings

Dramatically reduces live streaming bandwidth with zero additional latency

Optimizer Live VisualOn's AI-enhanced universal Content-Adaptive Encoding solution for Live streaming. Based on efficient AI models, it analyzes content before or in parallel with transcoding and dynamically configures the transcoder in real-time to achieve target quality (as measured by VMAF score) using a minimum number of bits, achieving bitrate savings of up to 60%.

Key Features and Benefits:

Bitrate Reduction	Reduces both average and peak bitrate by over 30% without compromising visual quality
KPI Enhancements	Improves key UX KPIs such as video start time, buffering ratio, etc.
CPU Efficiency	Efficient implementation increases CPU load by less than 15% on average
Open-Source Ecosystem Support	Pre-integrated and verified with FFmpeg based live streaming workflows
Live Workflow Integration	Supports Live workflows through efficient implementation of simultaneous multi-ABR ladder transcoding

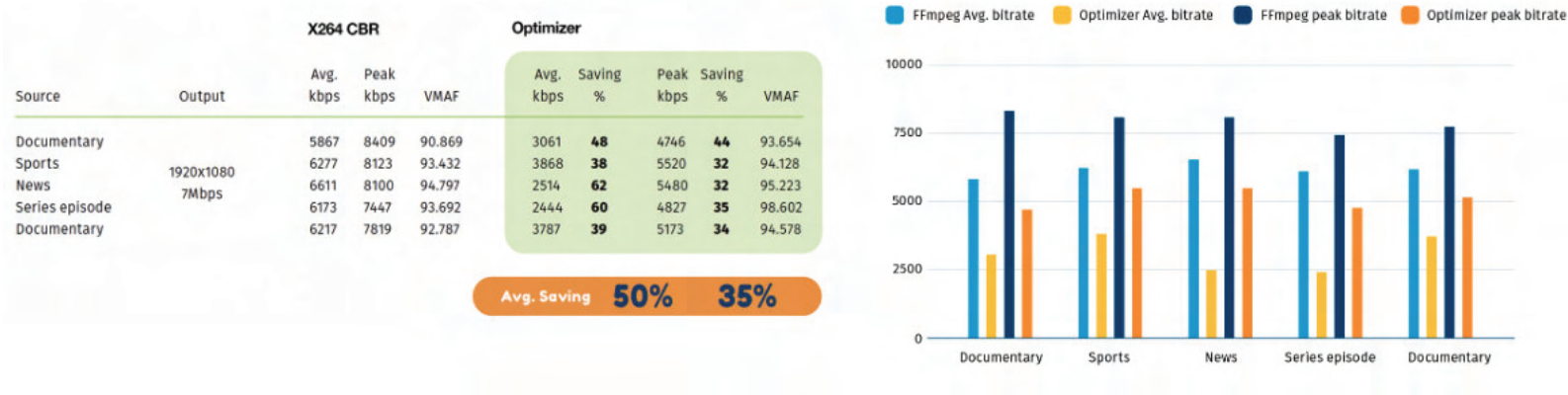| Source	Output	X264 CBR Avg. kbps	Peak kbps	VMAF	Optimizer Avg. kbps	Saving %	Peak kbps	Saving %	VMAF
Documentary		5867	8409	90.869	3061	48	4746	44	93.654
Sports	1920x1080 7Mbps	6277	8123	93.432	3868	38	5520	32	94.128
News		6611	8100	94.797	2514	62	5480	32	95.223
Series episode		6173	7447	93.692	2444	60	4827	35	98.602
Documentary		6217	7819	92.787	3787	39	5173	34	94.578

Avg. Saving **50%** **35%**

Figure1. Optimized encoding for Live content

Comparing real-time transcoding results with and without Optimizer Live reveals significant benefits. Optimizer Live effectively halves average bitrates and reduces peak bitrates by more than one-third while preserving or improving visual quality for a wide variety of different content types.

Technical Specifications:

- Supported Input Formats: any format supported by FFmpeg
- Output Formats: AVC and HEVC

Open-Source SW Encoders			Nvidia NVENC GPU Encoders			Intel Quick Sync Video HW Encoders			Qualcomm HW Encoders			NETINT ASIC HW Encoders		
x264	x265	SVT_AV1	H.264	HEVC	AV1	H.264	HEVC	AV1	H.264	HEVC	AV1	H.264	HEVC	AV1
✅	✅	**25H1**	✅	✅	**25H2**	✅	✅	**25H1**	✅	✅	**25H2**	✅	✅	**25H2**

Table1. Codec Support Across Different Encoders

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Maximizing Video Efficiency: Optimizer VOD for Video Streaming Savings

Dramatically reduces streaming bandwidth, Enhances Video Quality without Increasing Bitrates

Optimizer VOD is VisualOn's AI-enhanced universal Content-Adaptive Encoding solution for Video-On-Demand streaming. Based on efficient AI models, it analyzes content before transcoding and dynamically configures the transcoder to achieve target quality (as measured by VMAF score) using a minimum number of bits, achieving bitrate savings of up to 80%.

Key Features and Benefits:

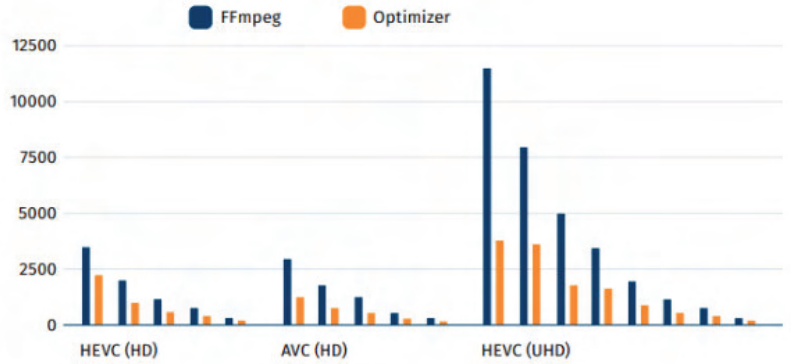|	
Bitrate Reduction	In actual production deployment, reduces average bitrate by over 54% without compromising visual quality
KPI Enhancements	Improves key UX KPIs such as video start time, buffering ratio, etc.
CPU Efficiency	Requires no additional HW due to efficient single-pass implementation
Open-Source Ecosystem Support	Pre-integrated and verified with FFmpeg framework through its APIs
VOD Workflow Integration	Supports VOD workflows through efficient implementation of simultaneous multi-ABR ladder transcoding

Figure1. Optimized encoding for VOD content

Comparing transcoding results with and without Optimizer VOD reveals significant benefits. Optimizer VOD effectively halves bitrates while preserving visual quality. It also significantly reduces CPU consumption compared to dual-pass encoding methods.

The table below compares the computation requirements and bandwidth saving performance of the Optimizer under different situations:

Comparison	Computation Difference	Bitrate Saving	Storage Saving
Netflix Per-Scene Encoding	~100x	Comparable	Comparable
Dual-Pass ABR	2x	40-70%	40-70%

Technical Specifications:

- Supported Input Formats: any format supported by FFmpeg
- Output Formats: AVC, HEVC, and AV1

Open-Source SW Encoders			Nvidia NVENC GPU Encoders			Intel Quick Sync Video HW Encoders			Qualcomm HW Encoders			NETINT ASIC HW Encoders		
x264	x265	SVT_AV1	H.264	HEVC	AV1	H.264	HEVC	AV1	H.264	HEVC	AV1	H.264	HEVC	AV1
✅	✅	✅	✅	✅	25H1	✅	✅	✅	✅	✅	25H1	✅	✅	25H1

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Optimizer (Fidelity)

Maximizing Video Efficiency:
Optimizer Fidelity for Video Storage Savings

Dramatically save on storage and transfer times

VisualOn Optimizer and Optimizer Fidelity represent state-of-the-art solutions for visually lossless file-to-file video transcoding. Optimizer is tailored for general-purpose transcoding, while Optimizer Fidelity specializes in high-quality, high-bitrate mezzanine (golden) files. It significantly reduces storage needs for high-quality source videos without loss of visual fidelity.

Key Features and Benefits:

Quality Preservation	Achieves visually lossless quality with consistently high VMAF, PSNR and SSIM scores, ensuring superior video quality preservation
Storage Efficiency	Delivers up to 80% reduction in video size to drastically reduce operational storage costs
Transfer Times	Reduces server-to-server and cloud-to-premise file transfer times
High Resolution Support	Caters to the demands of high-resolution content delivery by supporting SD, HD, 4K and 8K (coming soon)
Versatile Format Support	Supports all common industry input formats, output AVC or HEVC

Compelling Results:

Input	Input Bitrate (kbps)	Optimized Bitrate (kbps)	Delta	VMAF	SSIM	PSNR
720x608, 25fps, YUV422p	30,000	9,071	-69.76%	98.669	0.998	46.254
1920x1080, 25fps, YUV422p	50,000	29,584	-40.83%	97.950	1.000	52.706
3840x2160, 25fps, YUV422p	192,480	21,888	-88.63%	99.806	1.000	54.791

This table highlights significant bitrate reductions across all resolutions, with consistent visually lossless quality as indicated by the VMAF, PSNR, and SSIM scores.

Optimizer Fidelity Workflow:

Figure1. VisualOn Optimizer(Fidelity) Workflow

Technical Specifications:

- Supported Input Formats: any format supported by FFmpeg
- Output Formats: AVC, HEVC, and AV1

Optimizer for File Transcoding

Open-Source SW Encoders			Nvidia NVENC GPU Encoders			Intel Quick Sync Video HW Encoders			Qualcomm HW Encoders			NETINT ASIC HW Encoders		
x264	x265	SVT_AV1	H.264	HEVC	AV1	H.264	HEVC	AV1	H.264	HEVC	AV1	H.264	HEVC	AV1
✅	✅	✅	✅	✅	✅	✅	✅	✅	✅	✅	25H1	✅	✅	25H1

Table1. Codec Support Across Different Encoders

Optimizer Fidelity

Open-Source SW Encoders			Nvidia NVENC GPU Encoders			Intel Quick Sync Video HW Encoders			Qualcomm HW Encoders			NETINT ASIC HW Encoders		
x264	x265	SVT_AV1	H.264	HEVC	AV1	H.264	HEVC	AV1	H.264	HEVC	AV1	H.264	HEVC	AV1
✅	✅	**25H2**	✅	✅	**25H2**	✅	✅	**25H2**	✅	✅	**25H2**	✅	✅	**25H2**

Table2. Codec Support Across Different Encoders

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