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MEG001

Enhancing video quality and optimizing delivery cost

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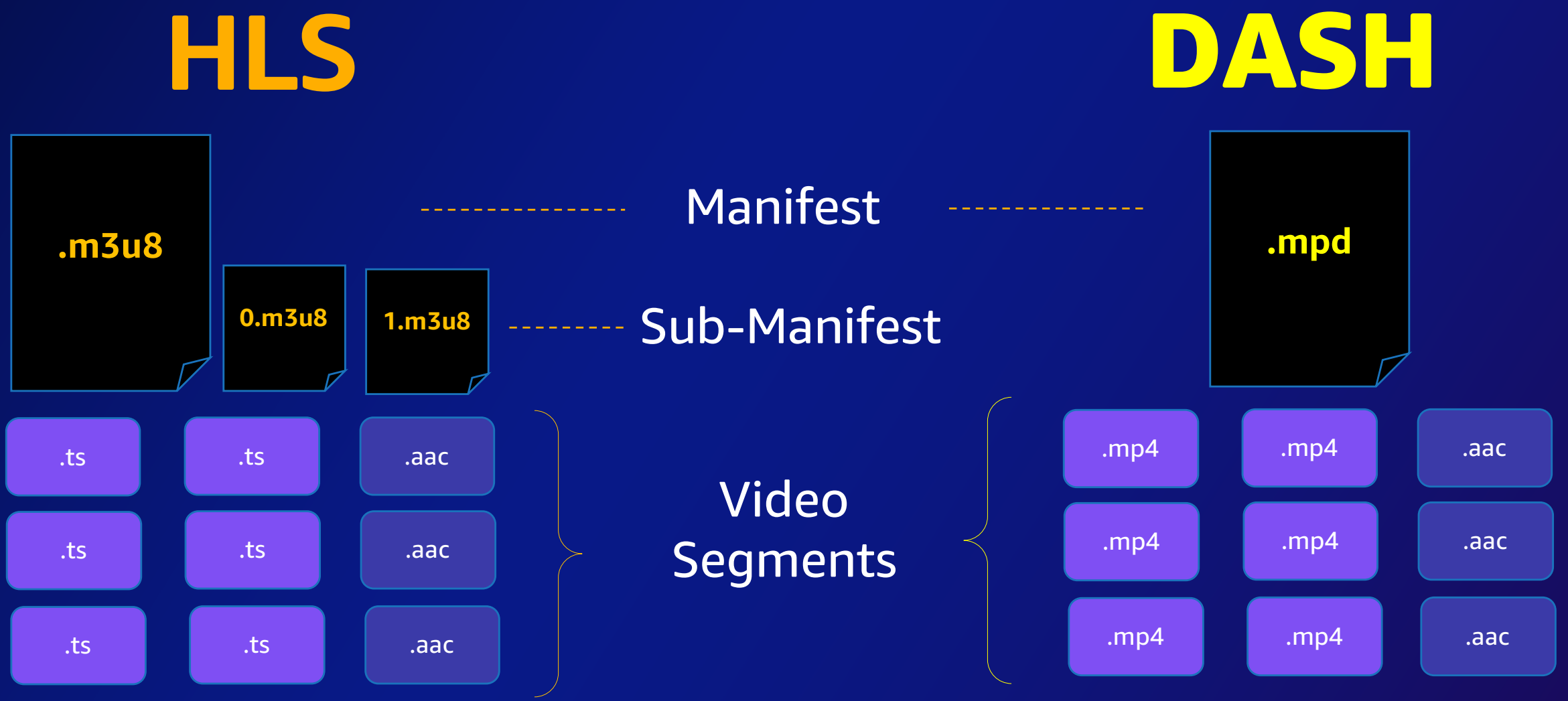
Agenda

- Introduction to streaming quality
- Changing streaming scene in India
- Operational challenges
- How Zee5 is dealing with it?
- Zee5 adoption of CMAF
- Fine tuning encoding parameters

Streaming media



Streaming media

CMAF

Manifest

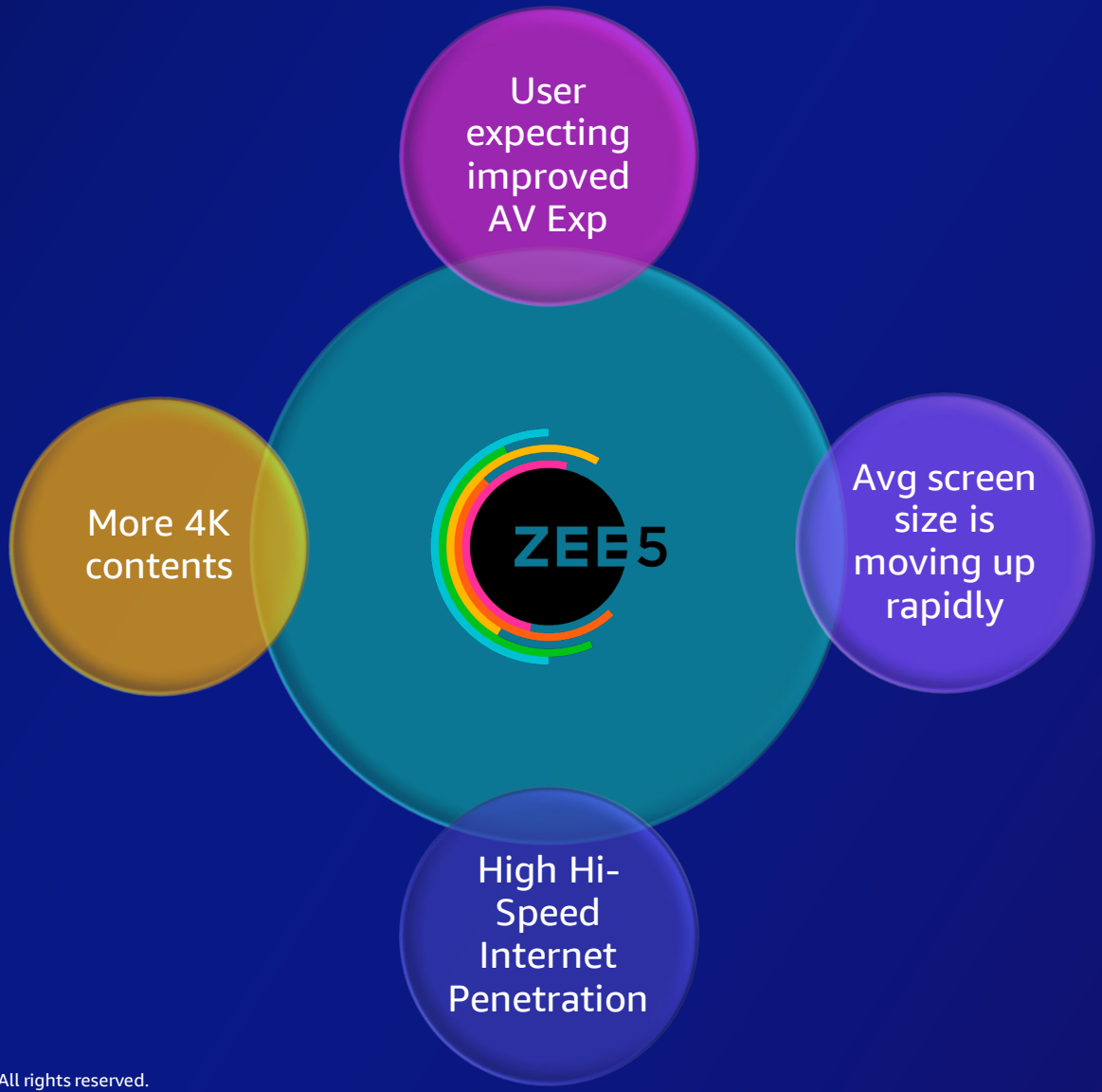
Sub-Manifest

Video Segments

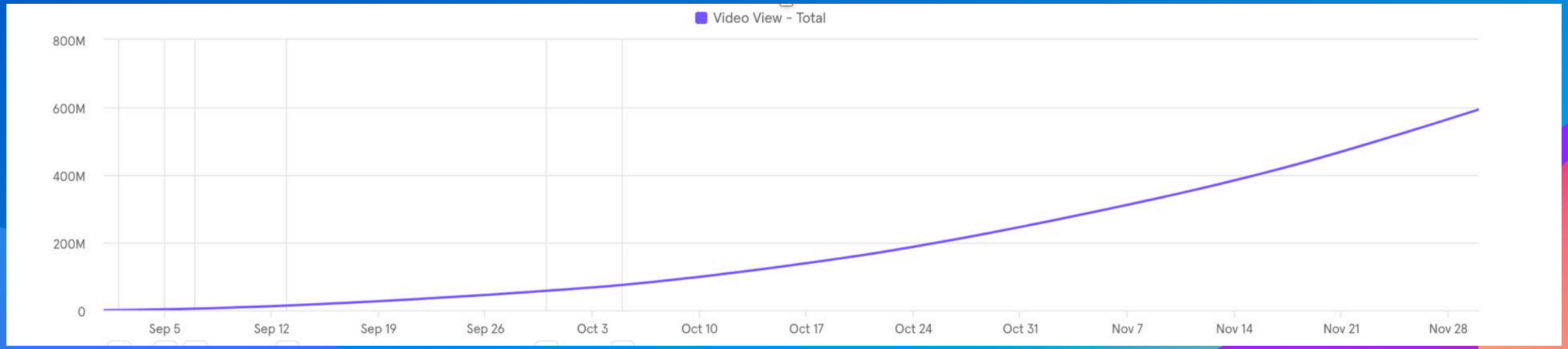
Cost of quality

Video Quality v/s Cost

Changing streaming landscape in India



4K viewing increase

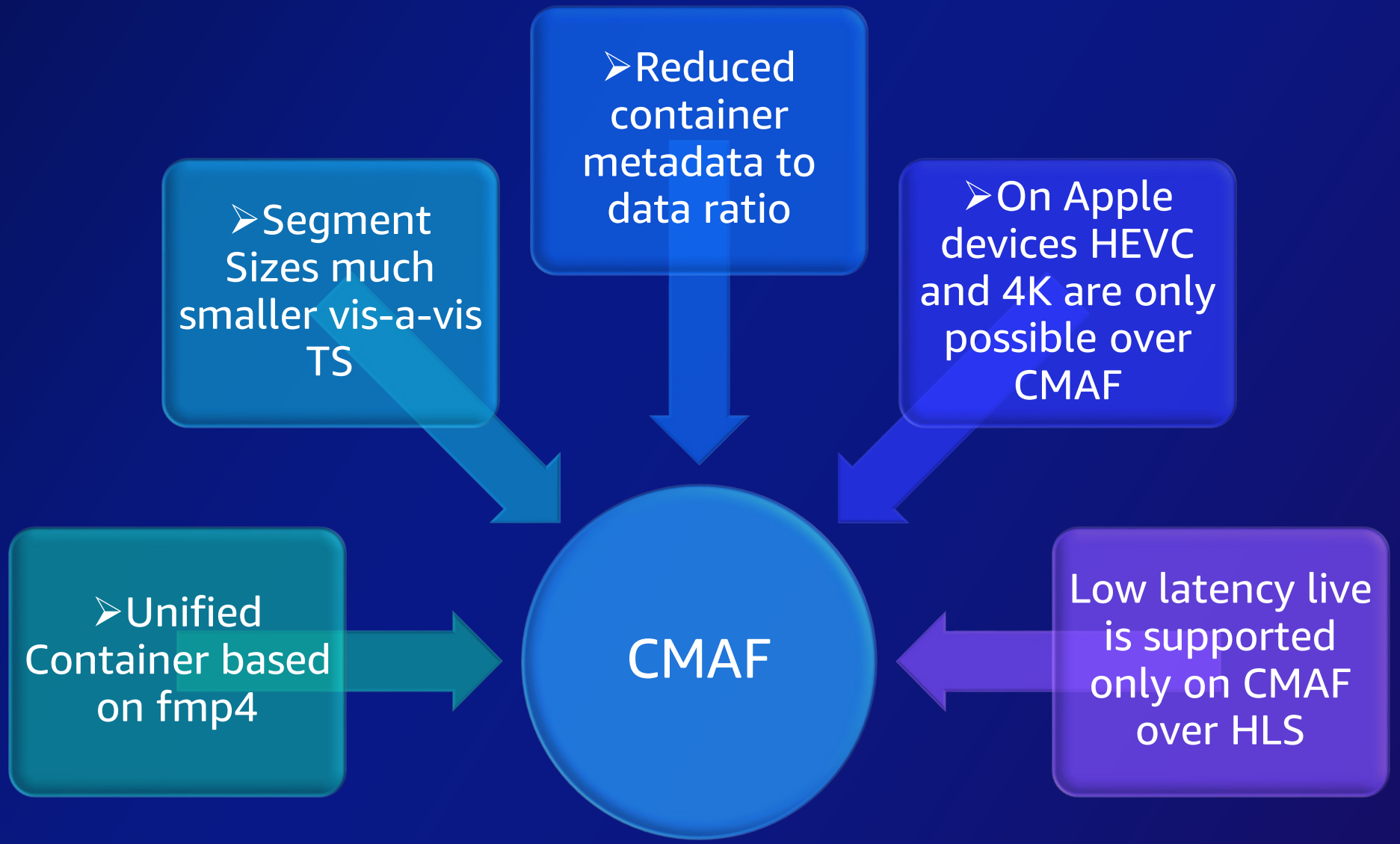


Operational challenges

How Zee5 is dealing with it?

- Challenging conventional wisdom about video quality improvement
- Solving challenges with out-of-box thinking
- Introduced CMAF to phase out HLS TS
- Fine-tuned video encoding parameters to improve AV quality while reducing bandwidth

CMAF (Common Media Application Format)



Zee5 adoption of CMAF

All HLS content is generated using CMAF

•Around 50% of live channels are on HLS CMAF

•Improved QoS significantly on Apple devices

•Reduced bandwidth usage helped keep tab on Op-Ex

•Enabled introduction of more HEVC content

•Working on enabling 4K support for live

Bandwidth usage improvement

Variant	Cumulative Size of all TS segments	Cumulative Size of all fMp4 segments	Saving
96p	27.3 Mbytes	4.4 Mbytes	83.88%
144p	30.6 Mbytes	6.8 Mbytes	77.77%
240p	45.5 Mbytes	17 Mbytes	62.55%
360p	75.6 Mbytes	37.6 Mbytes	50.26%
480p	96.9 Mbytes	52.5 Mbytes	45.82%
576p	121.8 Mbytes	69.9 Mbytes	42.69%
720p	221.8 Mbytes	140 Mbytes	36.88%
1080p	555.7 Mbytes	370.8 Mbytes	33.29%

Fine-tuning encoding parameters

- Savings of CMAF are mainly limited to HLS content
- Zee5 has significant user consuming for DASH
- Started fine-tuning quality-related parameters on the encoder
- Significant improvement was seen in Both AVC and HEVC
- All this with reduced bandwidth
- Fine-tuned mainly GOP settings, bit rate, quality level and noise reducer-related settings

Some details depicting improvement

Improvement on HEVC Renditions

Rendition	Size with existing Settings	VMAF score with existing Settings	Size with new Settings	VMAF score with new Settings
576p	163.2 Mbytes	69.4359	122 Mbytes	76.7871
720p	267.6 Mbytes	76.1588	233.8 Mbytes	84.09211
1080p	600.4 Mbytes	86.7654	509.2 Mbytes	93.0701

Improvement on AVC Renditions

Rendition	Size with existing Settings	VMAF score with existing Settings	Size with new Settings	VMAF score with new Settings
576p	152.5 Mbytes	59.5	128.4 Mbytes	65.04
720p	296.3 Mbytes	71.84	250.4 Mbytes	77.22
1080p	835.9 Mbytes	83.86	741.8 Mbytes	89.95

Reference

https://ottverse.com/optimising-cdn-cost-and-enhancing-video-quality-zee5/

skillbuilder.aws

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