

Packaging Decision Sheet

CMAF · cbcs · Shaka · Bento4 · Unified · AWS MediaPackage — defaults, trade-offs, market in 2026

Five 2026 packaging defaults

Default	Why and where to use it
Container	Fragmented MP4 / CMAF (ISO/IEC 23000-19, 2nd ed. 2020). Drop MPEG-TS unless a specific device fleet requires it.
Segment duration	4 s for VOD, 2 s for live, 0.33 s LL-HLS parts when chasing <5 s glass-to-glass. Apple HLS Authoring Spec rev 2025-09 recommends 6 s for non-LL HLS.
Manifest output	Emit both HLS multivariant playlist (.m3u8) and DASH MPD (.mpd) referencing the same CMAF segments. One set of bytes, two manifests.
Encryption	Common Encryption cbcs scheme (ISO/IEC 23001-7). All three major DRMs (Widevine, PlayReady ≥4.0, FairPlay) decrypt it. cenc only for pre-Android 7.0.
Keyframe alignment	Closed GOP with GOP length = segment duration on every rung. Mismatch is the most common packaging bug.

The 2026 packager market

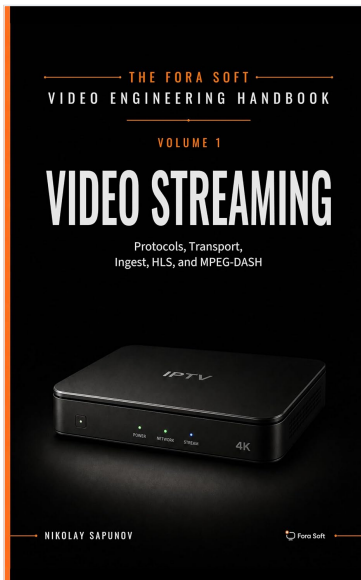
Packager	Licence	What it ships in 2026
Shaka Packager	open source	Google Widevine team. v3.7.2 Apr 2026. HLS, DASH, CMAF, cbcs/cenc, Widevine/PlayReady/FairPlay. De-facto reference.
Bento4	open source	Axiomatic Systems. mp4dash, mp4hls, mp4encrypt tools. Heavy production use in transcode pipelines.
GPAC	open source	Motion Spell. Fastest of the three in 2024 benchmark (3× Shaka, 5× Bento4 on CMAF VOD).
Eyevinnc Encore Packager	open source	Service wrapper around Shaka Packager (Jan 2026). Pipeline-style API.
Unified Origin	commercial	CodeShop. Software-only JIT origin. One fMP4 source per rung, all formats on the wire.
AWS Elemental MediaPackage	commercial	AWS managed JIT packaging. HLS, DASH, CMAF, MS Smooth. SPEKE multi-DRM. CloudFront egress.
Wowza Streaming Engine	commercial	Java server. Enterprise on-premise and edge. Ingest + packaging + origin + live transcode in one process.
Norsk (id3as)	commercial	TypeScript SDK. Programmable live pipelines with LL-HLS / LL-DASH support.

Static vs just-in-time — when each one wins

Dimension	Static packaging	JIT packaging
Catalogue size	<100 titles → static. Simplicity beats storage savings.	>1,000 titles → JIT. Storage cost forces the move.
Catalogue churn	Stable catalogue → static. Re-package rarely.	Frequent device / DRM rotations → JIT. Re-render on request.
CDN cache strategy	Stable URLs cache forever on the edge.	Deterministic JIT URLs still cache; needs an origin shield.
Origin compute	Near-zero. Disk read per segment.	Sub-millisecond per segment with modern JIT engines.
Storage cost	12k+ segment files per title at six rungs + 3 audio + 4 s segments.	~9 source fMP4 files per title; ~4,000× fewer objects on disk.
Operational story	Re-package on every codec, rendition, or DRM change.	Add new outputs by config; no catalogue re-render needed.

Segment-duration arithmetic

Segment	HTTP requests	Switching & startup latency	Where to use
2 s	1,800 / hr / rendition	$\geq 2 \text{ s switch} \cdot \geq 6 \text{ s startup (3 segs)}$	Live sports, fast-switching ABR.
4 s	900 / hr / rendition	$\geq 4 \text{ s switch} \cdot \geq 12 \text{ s startup (3 segs)}$	VOD default. Best balance.
6 s	600 / hr / rendition	$\geq 6 \text{ s switch} \cdot \geq 18 \text{ s startup (3 segs)}$	Cache-bound VOD catalogues. Apple HLS spec target.
0.33 s parts	10,800 / hr / rendition (LL-HLS)	Glass-to-glass < 5 s with LL-HLS / LL-DASH.	Live, latency-sensitive; needs LL-aware player.



GO DEEPER · VOLUME 2 OF 7

Video Streaming: A Complete Guide to Video Delivery

From Network Protocols and Transport to Ingest, HLS, and MPEG-DASH

By Nikolay Sapunov, CEO at Fora Soft · 1,124 pages · Kindle & paperback on Amazon

Read it on Amazon →

amazon.com/dp/B0HH8F4R82

This sheet gives the 2026 packaging defaults, the packager market, static versus JIT trade-offs and segment-duration arithmetic. Volume 2 goes deeper into the same layer: segment-based protocols, HLS, MPEG-DASH and CMAF packaging, contribution and ingest, and the latency budget that segment length eats into.

WHAT YOU WILL FIND INSIDE

- CMAF segments shared by HLS and DASH
- Segment length versus glass-to-glass latency
- HLS playlists and DASH MPD structure
- Ingest with RTMP, SRT and RIST

THE FULL HANDBOOK · 7 VOLUMES · 9,000+ PAGES · ALL ON AMAZON

Vol. 1 · Video Encoding — pixels and color to H.264, HEVC, AV1, quality metrics and AI

Vol. 2 · Video Streaming I — network transport, contribution and ingest, HLS, MPEG-DASH, CMAF

Vol. 3 · Video Streaming II — ABR, CDNs, players, WebRTC, DRM and the economics of delivery

Vol. 4 · Audio for Video I — PCM, codecs, loudness, accessibility, real-time voice processing

Vol. 5 · Audio for Video II — jitter buffers, lip sync, Atmos, quality metrics, neural codecs

Vol. 6 · AI for Video I — models and inference, computer vision, speech, search, generative video

Vol. 7 · AI for Video II — real-time pipelines, agents, serving, cost, compliance, verticals

Choosing between static packaging and JIT for your catalog?

We will size your catalog, pick the packager and segment length, and set up CMAF with cbcs so one set of files serves every device. 250+ video products shipped since 2005.

Book a 30-min call →

WhatsApp →

Email us →