

Trick Play, Seek, and DVR — Pre-Launch Checklist

Companion to article 5.9 · One-page reference for the three features that quietly break at launch

1. GOP and segment boundary discipline

- Encoder produces fixed-cadence keyframes (default: every 2 s) at the same wall-clock time across every rung of the bitrate ladder.
- Closed-GOP mode is enabled in the encoder — no B-frames reference across GOP boundaries.
- Packager confirms segment boundaries align across renditions (segment N at 1080p ends at the same PTS as segment N at 480p).
- Per-title and per-shot encoding pipelines pin the keyframe cadence; encoder-driven scene-cut placement is reviewed for boundary alignment.

2. Trick play and scrubber thumbnail wiring

- I-frame-only secondary stream encoded alongside the main ladder (~5% bitrate of the main stream).
- HLS: EXT-X-I-FRAME-STREAM-INF declared in the multi-variant playlist; EXT-X-I-FRAMES-ONLY tag in the I-frame media playlist.
- DASH: trick-mode AdaptationSet declared with the correct @maxPlayoutRate and @codecs attribute.
- Player team has verified fast forward at 2x, 4x, 8x actually switches to the I-frame stream (network tab inspection).
- Image rendition track encoded at the declared cadence (typically 1 image per 2 s, 160x90).
- HLS: EXT-X-IMAGE-STREAM-INF declared. DASH: image AdaptationSet per DASH-IF thumbnail guidelines.
- Scrubber preview displayed in the player matches the actual segment shown after release (no thumbnail-cadence drift).

3. DVR window, storage, and cache rules

- DVR window length agreed with product (typical: 30 min for casual live, 4 h for sports, 24 h for major broadcasts).
- DASH MPD@timeShiftBufferDepth set to the agreed duration in ISO 8601 form (PT30M, PT4H, PT24H).
- HLS media playlist retains the matching number of segments (segments × duration = window length).
- Packager storage retention exceeds the manifest window (overprovisioned by ≥ 15 minutes to absorb clock drift).
- CDN cache TTL: live segments 2 s, DVR segments 1 h, manifest 1 s. Cache-Control headers set at origin, not just at CDN.
- Origin shield tier configured between leaf edges and origin; DVR segments held with multi-hour TTL.
- Cache key strips session/analytics query strings (?token=, ?session=, ?_t=).
- Player exposes 'rewind 30 s' button and a scrubber with a visible 'live edge' marker.
- Live-to-VOD bridge tested: EXT-X-ENDLIST appears after broadcast end; DASH MPD@type transitions from dynamic to static.
- Live origin keeps serving the old URLs with a 301 redirect to VOD for at least one cache TTL after transition.

4. DVR storage arithmetic (reference)

Composite bitrate (all renditions + I-frame + thumbnails)	9.65 Mbps
Storage per channel-hour	4.34 GB
4-hour DVR window per channel	17.4 GB
24-hour DVR window per channel	104 GB
50 channels × 4-hour DVR (typical sports platform)	868 GB always-on
200 channels × 24-hour DVR (large OTT)	~65 TB always-on

Common pitfalls discovered the day after launch

- Manifest claims PT4H DVR but storage retains 30 min — players get 404s on seek.
- Cache key includes ?session= — DVR replays bypass the cache entirely.
- I-frame stream encoded but not declared in the manifest — fast forward shows a black screen.
- Thumbnail track cadence drifts from manifest declaration — scrubber preview misaligned.
- Live-to-VOD transition without EXT-X-ENDLIST — players keep polling, never see the VOD asset.