

Companion to article 3.7 of Block 3 (Codec Evolution). Print on A4 or US Letter.

AV1 in one paragraph - the royalty-free top-of-line codec for 2026

AV1	AOMedia Video 1; spec frozen Jun 2018; ~30% below HEVC, ~50% below H.264 at matched VMAF
Licence	AOMedia Patent License 1.0 - royalty-free for AOMedia members; Sisvel pool claims contested
Reference encoders	libaom (slow), SVT-AV1 (production, Intel+Netflix), rav1e (Rust)
Universal decoder	dav1d (VideoLAN); saturates 8-16 CPU cores at 4K60

AV1 hardware decode footprint - May 2026

Platform	Decode lands in	Encode lands in	Notes
Intel CPU iGPU	Tiger Lake Sep 2020	Arc / 14th-gen iGPU	Earliest mainstream HW decode
NVIDIA dGPU	RTX 30 Sep 2020	RTX 40 Oct 2022	RTX 40+ = real-time AV1 NVENC
AMD GPU	RDNA 2 Q4 2020	RDNA 3 Dec 2022	VCN 4 = AV1 encode
Apple silicon	A17 Pro / M3 Sep 2023	M5 Pro / M5 Max Mar 2026	Encode round-trip completed
Android flagship	Tensor / SD8 Gen 1 (2021-22)	Tensor G3+ / SD8 Gen 3+	Universal on post-2022 flagships
Smart TV	Most 2020+ models	n/a (cloud encode)	2023+ TVs ship AV1 at 4K60
iPhone 14 / earlier	NO hardware decode	n/a	Ship HEVC ladder fallback
Mid-range Android pre-2022	Software dav1d only	n/a	1080p comfortable, 4K marginal

FFmpeg + SVT-AV1 recipes you will actually use

1080p60 SDR VOD (production sweet spot, preset 5, 10-bit, CRF 28):

```
ffmpeg -i in.mxf -c:v libsvtav1 -preset 5 -crf 28 -b:v 0 -pix_fmt yuv420p10le \
-g 240 -svtav1-params tune=0:film-grain=8 -c:a libopus -b:a 128k out.mkv
```

4K HDR10 (BT.2020 PQ), constant quality preset 3:

```
ffmpeg -i master.mxf -c:v libsvtav1 -preset 3 -crf 22 -pix_fmt yuv420p10le \
-color_primaries bt2020 -color_trc smpte2084 -colorspace bt2020nc \
-svtav1-params tune=0:enable-hdr=1 -c:a copy out_4k_hdr.mkv
```

Live 1080p60 ingest, NVIDIA RTX 40+ hardware encoder:

```
ffmpeg -hwaccel cuda -i in -c:v av1_nvenc -preset p4 -tune ll -cbr 1 \
-b:v 4M -g 60 -keyint_min 60 -c:a libopus -b:a 96k -f mpegts udp://...
```

SVT-AV1 CRF cheat sheet (CRF != x265 CRF)

CRF 18-22	Near-transparent; archival; 4K HDR masters
CRF 22-26	Production VOD 1080p-4K; the default range
CRF 26-30	Bandwidth-priority streaming; mobile-first content
CRF 30-36	Low-bitrate device tail; 480p / 360p ladders

Four-stage AV1 rollout plan for a streaming product

1. Audit. Measure how many of your viewers have AV1 hardware decode (~80% by Netflix 2025 cert data).
2. Pilot. Add an AV1 SVT preset 5 ladder for top-traffic 1080p/4K assets; keep HEVC + H.264 fallback.
3. Expand. Move 30-50% of catalogue to AV1 + HEVC dual ladders; track CDN savings vs encoder cost.
4. Default. AV1 + H.264 floor for all greenfield; HEVC retained only while pre-A17-Pro Apple tail matters.