

GStreamer Vulkan: ⚡ pipeline update ⚡

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Quick Recap

-  **H.264/H.265 decoder** released in GStreamer 1.24
-  **H.264 encoder** merged in 1.27
-  **AV1 decode/encode** under review / in the pipeline
-  **Vulkan extensions** support needed (Maintenance2, QPMap, intra refresh)
-  **Colorspace** limited to NV12 only
-  **Zero-copy** from decoder to sink needed
- Base classes and Vulkan infrastructure being developed

New Codecs added



- **H.264 Encode** (Jul 2025) - Production-ready H.264 encoder with gst base class.
- **VP9 Decode** (Sept 2025) - Full VP9 decoder support
- **AV1 Encode** (Aug 2024) - Basic AV1 encoding unit test (ONLY)
- **AV1 Decode** (Under review) - Complete implementation (under review)



Pipeline items delivered!

Current Status



- **Complete Codec Suite from Vulkan** - H.264/H.265, VP9, AV1 (decode/encode)
- **Enhanced Hardware Support** - Fine-grained extension detection
- **Robust Testing** - CI integration and comprehensive test coverage
- **Multi-Vendor Compatibility** - NVIDIA, AMD, Intel driver support
- **Multi-Platform Compatibility** - Linux, Windows



Fluster



Improvements Across All Codecs

Codec	NVIDIA	RADV (AMD)	ANV (Intel)
H.264	112/135 (+45)	102/135 (+1)	127/135 (+73)
H.265	133/147 (+15)	137/147 (+19)	97/147 (+7)
VP9	237/305	268/305	292/305
AV1	197/242	234/242	0/242

- Nvidia: *570.123.19*
- RADV/ANV: *mesa 25.3-rc1*

In the pipeline igalia

-  Vulkan H.265 encoder in 1.28
-  Vulkan AV1 encoder
-  QP map support in vulkan encoder
-  **Performance improvements** through advanced Vulkan features
-  **Better results in test suite** : Improve reliability

Questions ?





Thanks!

