CiRES21

NETINT

Peak performance, minimal footprint

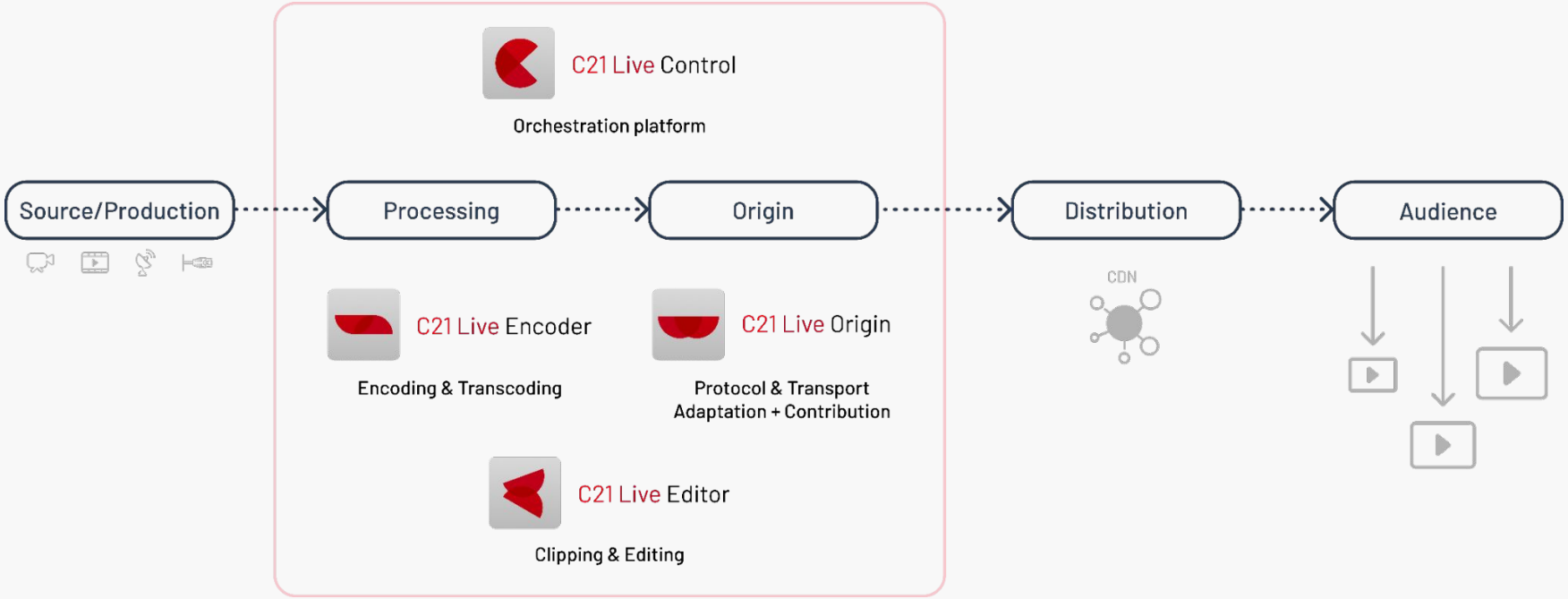
Rethinking media processing efficiency

IBC 2025

Our flagship

CPU → GPU

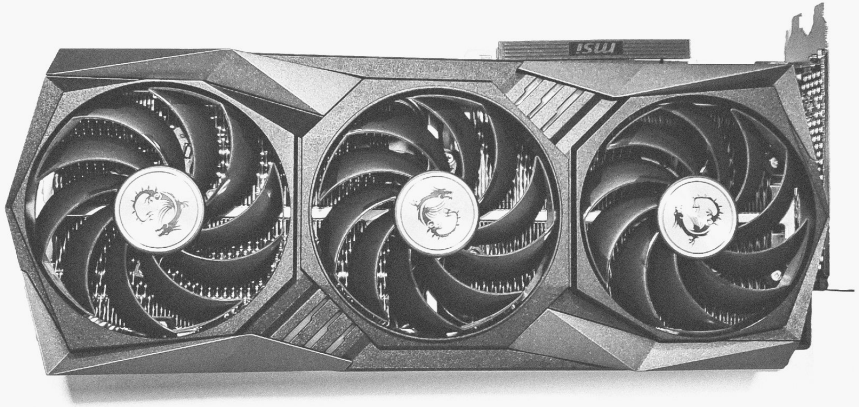
Cires21 Livestreaming Ecosystem



Our flagship, now with NETINT

CPU → GPU → VPU

GPU Reality Check



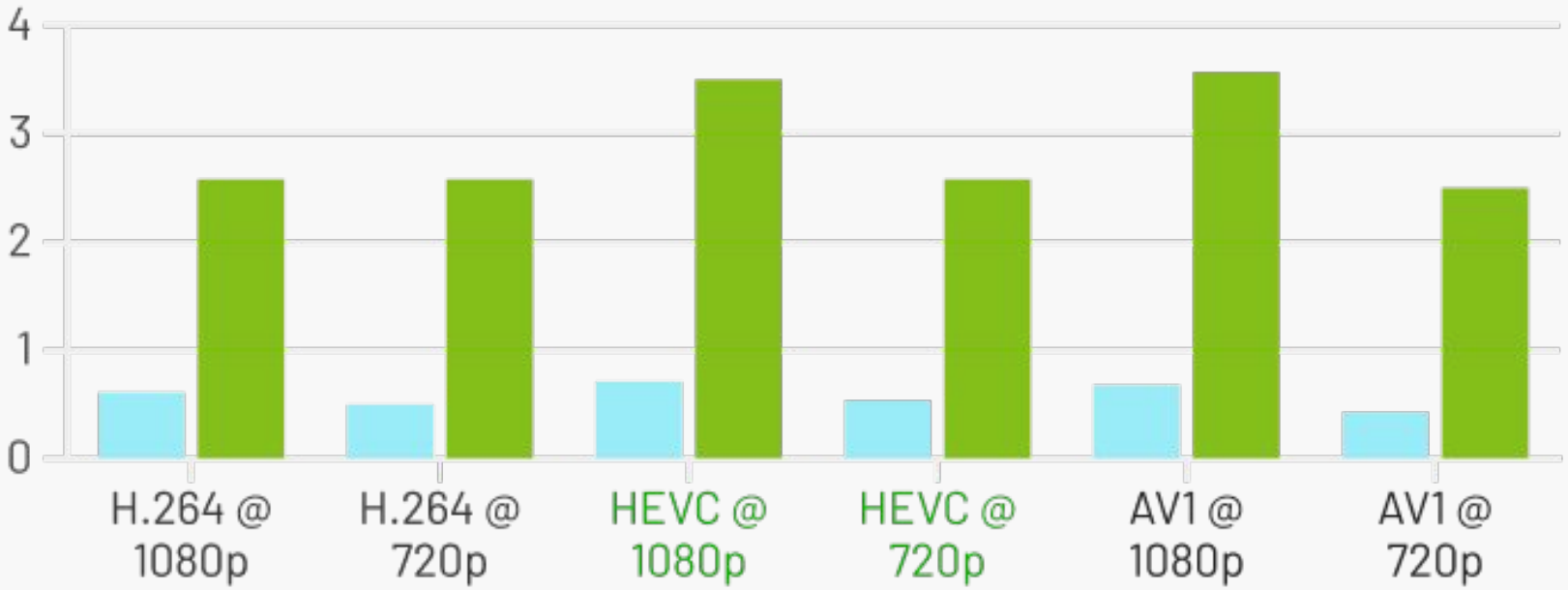
Test Methodology

- Environment: Akamai Cloud, Frankfurt.
- Instances: RTX 4000 Ada (CUDA/NVENC) vs NETINT Quadra T1U (Libxcoder).
- Workflows: 1:1 & 1→N ABR.
- Metrics: throughput, power, utilization, VMAF (avg + 5th percentile).

Efficiency Gain

Codec	Resolution	NETINT W/Stream	NVIDIA W/Stream	Efficiency Gain (NVIDIA ÷ NETINT)
H.264	1080p	0.61	2.58	4.2 ×
	720p	0.50	2.58	5.2 ×
HEVC	1080p	0.71	3.50	4.9 ×
	720p	0.54	2.58	4.8 ×
AV1	1080p	0.68	3.57	5.2 ×
	720p	0.43	2.50	5.8 ×

Efficiency Gain



Scaling at 1,000 Streams...

Encoder	Power/Stream (W)	Total Power (W)	Annual Energy (kWh)	Relative Efficiency
NETINT Quadra T1U	0.614	~614	~5,376	Baseline
NVIDIA RTX 4000 Ada	2.579	~2,579	~22,600	~4.2× higher energy cost

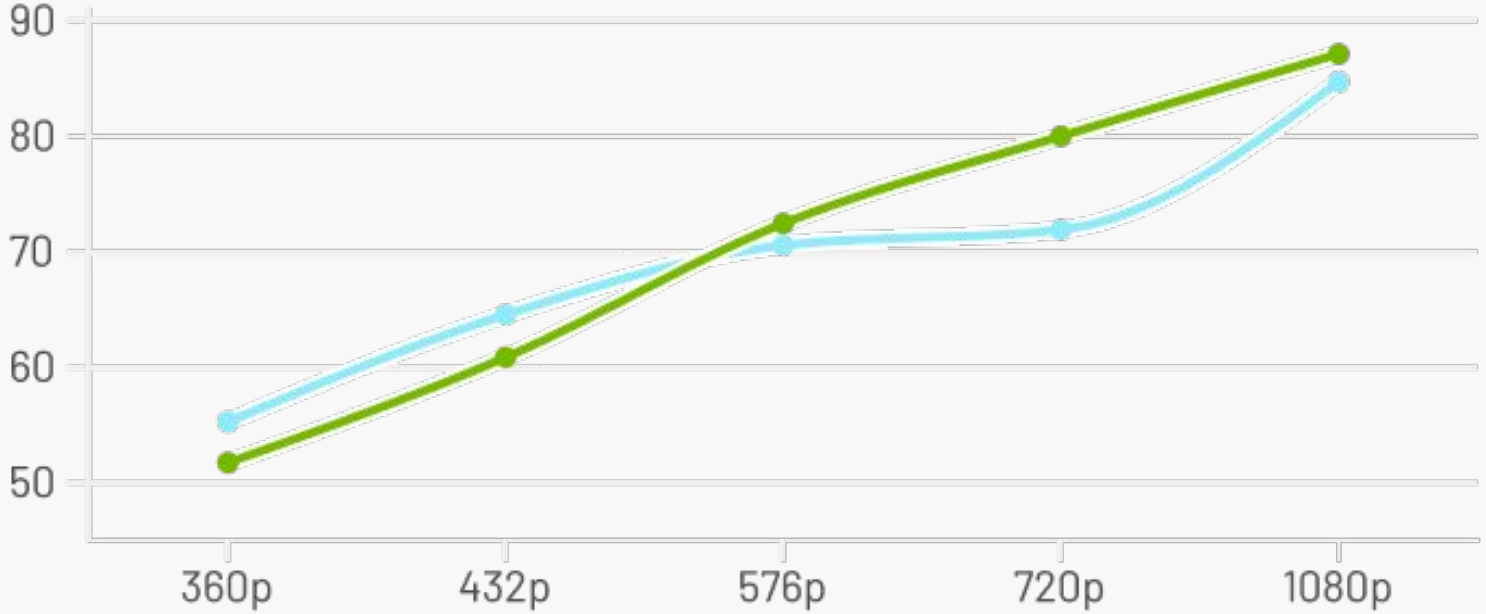
Transcode Job Capacity by Resolution

- At 1080p, job counts converge (≈19 streams for H.264), but the GPU consumes **~4× more power for the same throughput**.
- At 720p, NVIDIA scales slightly higher in stream count (24 vs. 22 for NETINT) but at a **5× energy penalty**.
- At lower rungs (432p, 360p), NVIDIA reaches up to 30 streams, compared to NETINT's 20–21, yet efficiency reverses: NETINT maintains **sub-0.5 W/stream, while NVIDIA requires 1.5–1.7 W/stream**.

Ok, but what about quality?

Resolution	NETINT VMAF	NVIDIA VMAF	Δ (NVIDIA - NETINT)	Winner
1080p	84.72	87.13	2.41	NVIDIA
720p	71.91	80.01	8.1	NVIDIA
576p	70.55	72.45	1.9	NVIDIA
432p	64.55	60.86	-3.69	NETINT
360p	55.27	51.73	-3.54	NETINT

VMAF Scores for AV1



Key takeaways...

- NETINT Quadra T1U = **4–6× more efficient per stream**.
- NVIDIA RTX 4000 Ada = higher HD quality, but at **3–6× the power cost**.
- **Low-resolution ABR**: NETINT superior in both quality & efficiency.
- Recommendation: Hybrid deployments → GPUs for premium HD, VPUs for scale.

The bottomline

More streams, less power.

Lower costs, greener streaming.

Scalable without compromise.

Thanks!