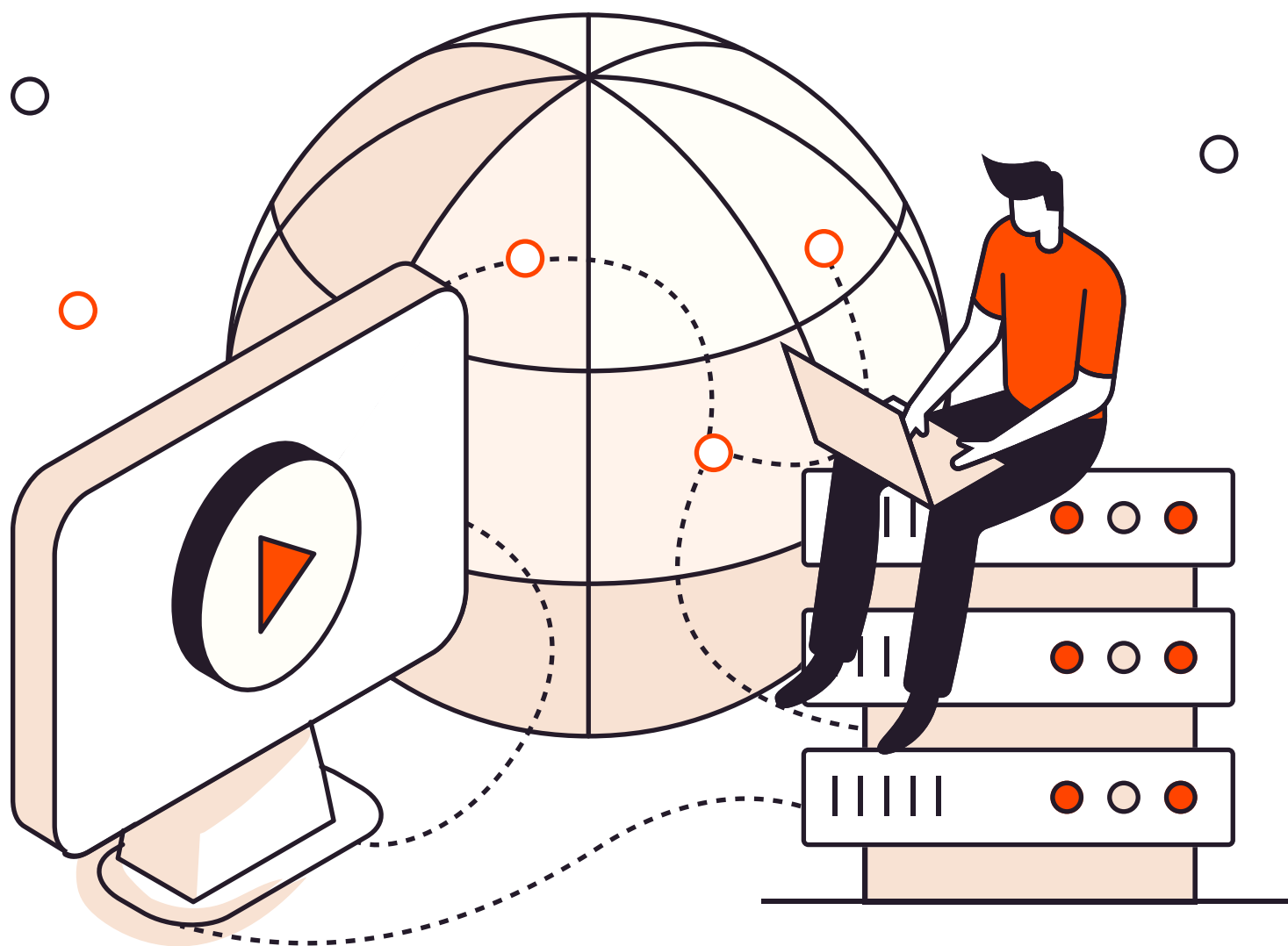


Live Streaming Cost Comparison 2024



Executive summary

In 2024, reducing costs is paramount for live and video-on-demand (VOD) content providers due to increasing pressures on content creation, distribution, and subscription rates. This white paper provides a detailed cost comparison of cloud video transcoding services and CDN delivery for live streaming. The comparison given is the cost per hour of video, with various pricing models and strategies examined. By analyzing the pricing for both Full HD and 4K live streams, the white paper offers essential insights to help content providers optimize their costs and maintain high-quality streaming services.

Introduction

The streaming industry faces significant cost challenges in 2024, impacting content delivery and subscription rates. With the rise in content availability and intensified market competition, providers are under pressure to reduce costs while maintaining high-quality services. **Recent data** indicates a shift in viewership patterns, with lower viewership categories increasing in popularity and high viewership categories declining, adding to the financial strain on providers.

Content costs have become a critical concern, particularly affecting the middle and high-tier subscriber segments. As providers strive to balance pricing and audience expectations, cost optimization has become essential. Network delivery optimization, affordable content delivery networks (CDNs), and cloud-based services are key strategies in this effort.

In this study, we provide a comprehensive cost comparison of cloud video transcoding services and CDN delivery for live streaming, using an hour of video as the standard unit of measure. By examining different pricing models and strategies, we offer valuable insights to help content providers make informed decisions and effectively manage their streaming costs.

Methodology

To establish a common baseline for prices for both Full HD and 4K live streams, we decided to use one hour of streaming as a standard unit, because it is a straightforward and easy-to-understand metric for video. Live broadcasts are held for a specific duration, so comparing the prices in terms of hours is a logical approach.

However, comparing video encoding cloud services by price is more complicated than it seems because cloud solutions use different pricing schemes. For example, one provider may charge for the number of output minutes, another for the total number of gigabytes, and a third for renting servers and software. Therefore, we put all of these factors together and calculated the average cost of one hour of video streaming.

A note on plan options

For live broadcasts over the internet, video must be transcoded to different bitrates (multi-bitrate, adaptive bitrate), prepared for playback on various devices, and delivered to the end viewer via CDN. The video encoding process is often complex and expensive.

There are different approaches to solving the task:

- Transcode on your own hardware server
- Transcode with open-source software
- Rent a cloud solution for transcoding

The first and second solutions are typically employed when there is a significant amount of existing code or when it is necessary to build everything from scratch. However, it's essential to remember that the hardware has a limited lifespan and eventually requires additional investments and replacement. At the same time, in-house solutions are only effective if individuals possess the necessary expertise to support them. That's why companies often choose a cloud solution that maintains quality and allows scaling.

There are several basic pricing models in the cloud encoding market:

- Per gigabyte
- Per CPU
- Per minute
- Hybrid models
- Other

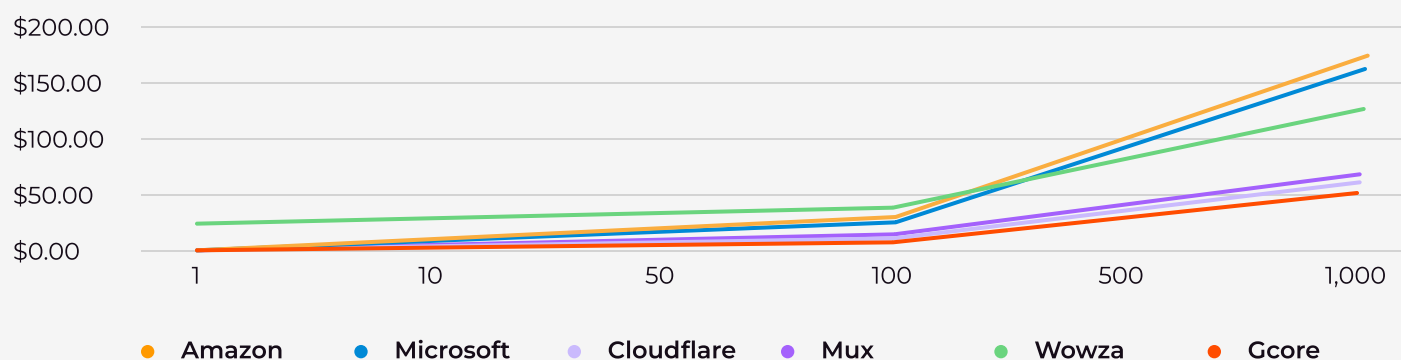
Summary of results

Full HD Video encoding

Here's a summary of the cost of transcoding live video per hours of original stream for full HD videos:

Live Full HD Transcoding	Hours						
	1	10	50	100	500	1,000	10,000
Amazon	\$4	\$43	\$217	\$435	\$2,173	\$4,346	\$43,460
Microsoft	\$3	\$31	\$153	\$305	\$1,527	\$3,054	\$30,540
Cloudflare	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Mux	\$2	\$24	\$120	\$238	\$1,130	\$2,210	\$21,650
Wowza*	\$28	\$50	\$150	\$275	\$1,275	\$2,525	\$25,025
Gcore	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Live Full HD CDN Streaming



4K video transcoding and delivery

Here's a summary of the cost of transcoding and delivering live 4K video per hours of original stream. Surprisingly, only some platforms are willing to transcode 4K video, and even fewer are ready to stream it.

Live 4K Transcoding	Hours						
	1	10	50	100	500	1,000	10,000
Amazon	\$9	\$87	\$437	\$875	\$4,373	\$8,746	\$87,463
Microsoft	-	-	-	-	-	-	-
Cloudflare	-	-	-	-	-	-	-
Mux	\$7	\$72	\$360	\$714	\$3,390	\$6,630	\$64,950
Wowza*	\$30	\$75	\$275	\$525	\$2,525	\$5,025	\$50,025
Gcore	\$6	\$58	\$288	\$522	\$2,460	\$4,620	\$43,200

Live 4K CDN Delivery	Hours						
	1	10	50	100	500	1,000	10,000
Amazon*	\$0.58	\$6	\$29	\$58	\$288	\$576	\$5,282
Microsoft*	-	-	-	-	-	-	-
Cloudflare	-	-	-	-	-	-	-
Mux	\$0.22	\$2	\$11	\$22	\$108	\$216	\$2,145
Wowza*	\$25	\$29	\$45	\$65	\$225	\$425	\$4,025
Gcore	\$0.21	\$2	\$11	\$21	\$106	\$211	\$1,272

Key results

The three main takeaways are:

- If you previously had to transcode videos yourself to save money by delegating tasks to your programmers, you can now optimize costs so that your developers can focus on more critical business tasks than setting up video transcoding.
- Many streaming providers fail to offer cutting-edge 4K streaming.
- Gcore is the most cost-efficient option in every scenario.

Streaming cost calculations

Most iOS, Android, web, and smart TV video players use HTTP Live Streaming (HLS) with several bitrates. We chose values that align with Apple's recommended transcoding schemes in the [HLS specification](#), making adjustments based on the average capabilities of our services. We also considered the ability of modern hardware codecs to achieve a lower bitrate without compromising visual quality or processing speed.

Since H.264 AVC is still the most playable video codec for all devices and browsers, we tested for output of HLS with H.264/AVC video transcoding. Most services charge additional money for the H.265/HEVC codec. 4K was also transcoded by H.264/AVC.

Parameters of video encoding into multiple bitrate video streams:

16:9 aspect ratio	H.264/AVC (kbit/s)	Audio AAC 2.0 stereo	Frame rate
427 x 240	200	64	≤ 30 fps
640 x 360	450	64	≤ 30 fps
854 x 480	800	128	≤ 30 fps
1280 x 720	1800	128	≤ 30 fps
1920 x 1080	4050	128	≤ 30 fps
2560 x 1440	7200	196	Same as source
3840 x 2160	14000	196	Same as source

This analysis used publicly available prices for all services. (The prices are current as of June 2024.)

Pricing schemes and cost analysis can be surprisingly complex, so we encourage you to research using this study as a guide to help you understand the options available in the market.

As expected, some providers offer volume discounts.

Some globally available services do not incur egress data transfer charges. Additionally, some service providers may not offer original video file storage. In these instances, storage costs have been incorporated into the pricing structure. However, you can calculate your storage requirements for a more tailored cost analysis.

The following section provides details of price comparisons between cloud video services for the entire cycle of live video processing and delivery.

Price analysis

Amazon Media Service (MediaLive, MediaPackage, Amazon CloudFront)

Amazon Media Services is one of the most well-known SaaS providers, with payment based on the number of processed videos per gigabyte and time. The essential quality of video transcoding is enough for test comparison. Access to two-pass transcoding needs a professional level, which is available for an additional fee but is not necessary for the test. We used H.264 for one-pass transcoding at 30 frames per second for on-demand tariffs. This may be one of the most complex calculating methods, but it is also the most adaptable due to the specific payment for every function.

The following parameters are taken into account for encoding and broadcasting:

- Live ingest processing is estimated per gigabyte of the original stream, and HD income processing is estimated per hour. The original format can significantly impact the overall cost.
- Video encoding to outgoing qualities is estimated per hour:
 - SD output (3 layers: 240, 360, 480)
 - HD output cost (2 layers: 720, 1080)
 - 4K output cost (2 layers: 1440, 2160)
 - Audio output (1 layer)
- Outgoing traffic is originated in gigabytes. Live streams are usually watched “here and now,” rarely rewinding, so the recommendation of the originating level = 99.7%.
- Outgoing traffic is estimated per gigabyte.

Full HD

Video encoding calculation table, hours of original video:

AWS H.264 HD	Hours						
	1	10	50	100	500	1,000	10,000
Live Ingest GB	0.045	0.45	2.25	4.5	22.5	45	450
Live Ingest	\$0.00	\$0.02	\$0.10	\$0.20	\$1.01	\$2.03	\$20.25
HD income	\$0.35	\$3.54	\$17.70	\$35.40	\$177.00	\$354.00	\$3,540.00
SD outcome cost (3 layers: 240, 360, 480)	\$1.60	\$16.02	\$80.10	\$160.20	\$801.00	\$1,602.00	\$16,020.00
HD outcome cost (2 layers: 720, 1080)	\$2.12	\$21.24	\$106.20	\$212.40	\$1,062.00	\$2,124.00	\$21,240.00
Audio outcome (1 layer)	\$0.26	\$2.64	\$13.20	\$26.40	\$132.00	\$264.00	\$2,640.00
Total	\$4.35	\$43.46	\$217.30	\$434.60	\$2,173.01	\$4,346.03	\$43,460.25

Video delivery calculation table, in hours watched by end viewers:

AWS H.264 HD LIVE	Hours						
	1	10	50	100	500	1,000	10,000
Originating, GB live	0.01	0.06	0.28	0.56	2.82	5.64	56.40
Originating	\$0.00	\$0.00	\$0.02	\$0.03	\$0.17	\$0.34	\$3.38
Outgoing traffic	1.8801	18.801	94.005	188.01	940.05	1880.1	18801
Cost outgoing traffic	\$0.17	\$1.69	\$8.46	\$16.92	\$84.60	\$169.21	\$1,648.09
Total	\$0.17	\$1.70	\$8.48	\$16.95	\$84.77	\$169.55	\$1,651.47

4K

Video encoding calculation table, hours of original video:

AWS H.264 4K UHD	Hours						
	1	10	50	100	500	1,000	10,000
Live Ingest GB	0.1125	1.125	5.625	11.25	56.25	112.5	1125
Live Ingest	\$0.01	\$0.05	\$0.25	\$0.51	\$2.53	\$5.06	\$50.63
HD income	\$2.66	\$26.64	\$133.20	\$266.40	\$1,332.00	\$2,664.00	\$26,640.00
SD outcome cost (3 layers: 240, 360, 480)	\$1.60	\$16.02	\$80.10	\$160.20	\$801.00	\$1,602.00	\$16,020.00
HD outcome cost (2 layers: 720, 1080)	\$2.12	\$21.24	\$106.20	\$212.40	\$1,062.00	\$2,124.00	\$21,240.00
UHD outcome (2 layers 1440, 2160)	\$2.09	\$20.87	\$104.36	\$208.72	\$1,043.60	\$2,087.20	\$20,872.00
Audio outcome (1 layer)	\$0.26	\$2.64	\$13.20	\$26.40	\$132.00	\$264.00	\$2,640.00
Total	\$8.75	\$87.46	\$437.31	\$874.63	\$4,373.13	\$8,746.26	\$87,462.63

Video delivery calculation table, in hours watched by end viewers:

AWS H.264 4K LIVE	Hours						
	1	10	50	100	500	1,000	10,000
Originating, GB live	0.02	0.19	0.96	1.92	9.58	19.16	191.59
Originating	\$0.00	\$0.01	\$0.06	\$0.11	\$0.57	\$1.15	\$11.50
Outgoing traffic	6.3864	63.864	319.32	638.64	3193.2	6386.4	63864
Cost outgoing traffic	\$0.57	\$5.75	\$28.74	\$57.48	\$287.39	\$574.78	\$5,270.48
Total	\$0.58	\$5.76	\$28.80	\$57.59	\$287.96	\$575.93	\$5,281.98

Microsoft Azure Media Services v3

Azure is another major service operating on the SaaS model. Here, the fee is charged according to the number of minutes of the original stream and per GB of outgoing traffic. For test purposes, it's enough to use HD settings and a standard streaming endpoint.

The following parameters are taken into account for encoding and broadcasting:

- HD income stream is estimated per minute.
- In Microsoft Azure Media Services, a Streaming Endpoint represents a packaging and origin service. Please visit the streaming endpoint concept support page to understand the module. It's estimated per day of usage.
- Outgoing traffic is estimated in GB.

Full HD

Video encoding calculation table, hours of original video:

Azure H.264 HD	Hours						
	1	10	50	100	500	1,000	10,000
SD/HD cost (up to 1080)	\$3.05	\$30.54	\$152.70	\$305.40	\$1,527.00	\$3,054.00	\$30,540.00
Total	\$4.35	\$43.46	\$217.30	\$434.60	\$2,173.01	\$4,346.03	\$43,460.25

Video delivery calculation table, in hours watched by end viewers:

Azure H.264 HD	Hours						
	1	10	50	100	500	1,000	10,000
Standard streaming endpoint	\$2.08	\$2.08	\$2.08	\$2.08	\$6.24	\$10.40	\$87.39
Outgoing traffic	1.8801	1.8801	94.005	188.01	940.05	1880.1	18801
Cost outgoing traffic	\$0.15	\$1.52	\$7.61	\$15.23	\$76.14	\$152.29	\$1,470.08
Total	\$2.23	\$3.60	\$9.70	\$17.31	\$82.39	\$162.69	\$1,557.46

Currently, Azure Media Services does not support live streaming with 4K resolutions.

Cloudflare Stream

Cloudflare is a SaaS that works on per-minute pricing, meaning it charges by the minute of output. The service is obliged to use its internal storage and CDN and uses its grid of video and audio bitrates that are not optimal for streaming, but for this analysis, it makes it possible to transcode video for free. The quality of the output video and the transcoding parameters are beyond this study's scope, so please look at the output stream in your app. The good news is that the service recently launched low-latency streams, but the mode is still in beta.

The following parameters are taken into account for encoding and broadcasting:

- Transcoding video for free.
- Streaming via CDN is estimated to be the number of minutes of content watched by end viewers, billed every 1,000 minutes.

Full HD

Video encoding calculation table, hours of original video:

Cloudflare H.264 HD	Hours						
	1	10	50	100	500	1,000	10,000
SD/HD cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Video delivery calculation table, in hours watched by end viewers:

Cloudflare H.264 HD	Hours						
	1	10	50	100	500	1,000	10,000
CDN cost	\$1.00	\$1.00	\$3.00	\$6.00	\$30.00	\$60.00	\$600.00
Total	\$1.00	\$1.00	\$3.00	\$6.00	\$30.00	\$60.00	\$600.00

Currently, Cloudflare does not support live streaming with 4K resolutions.

Mux

Mux fully supports the streaming counting model “per minute”. Unlike other providers, it does not have its own CDN; nonetheless, its website mentions a multi-CDN setup.

The following parameters are taken into account for encoding and broadcasting:

- Transcoding video is estimated per minute.
- Video delivery is estimated per minute, too.

Since the previous Gcore cost comparison analysis report in 2022, prices have significantly changed: Mux has introduced a public discount ladder, and live streaming was allocated to a separate tariff segment.

Full HD

Video encoding calculation table, hours of original video:

Mux H.264 HD	Hours						
	1	10	50	100	500	1,000	10,000
FullHD cost	\$2.40	\$24.00	\$120.00	\$238.00	\$1,130.00	\$2,210.00	\$21,650.00
Tariff	Live						
Total	\$2.40	\$24.00	\$120.00	\$238.00	\$1,130.00	\$2,210.00	\$21,650.00

Video delivery calculation table, in hours watched by end viewers:

MUX H.264 HD	Hours						
	1	10	50	100	500	1,000	10,000
CDN cost	\$0.07	\$0.72	\$3.60	\$7.20	\$36.00	\$72.00	\$715.00
Tariff	Streaming						
Total	\$0.07	\$0.72	\$3.60	\$7.20	\$36.00	\$72.00	\$715.00

Currently, Mux does not support live streaming in 4K resolution.

Wowza Video

Wowza Video (live streaming) is one of the few services that charges customers based on package selection. The tariff structure has not changed significantly since the last study, but the annual tariff was deprecated. Tariffs assume that the package includes some "volume" and overage pricing. This is considered in the calculation, so we marked these calculations with an asterisk.

The following parameters are taken into account for encoding and broadcasting:

- "Streaming hours" is the transcoding time of live and VOD, estimated per minute.
- "Viewing hours" is the total time that all of your viewers watch the video, estimated per minute.
- Wowza Video supports 4K streaming. Content streamed in 4K is charged twice the rate for streaming hours and four times the fee for viewing hours.

Full HD

Video encoding calculation table, hours of original video:

Wowza H.264 HD	Hours						
	1	10	50	100	500	1,000	10,000
Streaming hours cost	\$27.50	\$50.00	\$150.00	\$275.00	\$1,275.00	\$2,525.00	\$25,025.00
Tariff*	Pay As You Go						
Total*	\$27.50	\$50.00	\$150.00	\$275.00	\$1,275.00	\$2,525.00	\$25,025.00

Video delivery calculation table, in hours watched by end viewers:

Wowza H.264 HD	Hours						
	1	10	50	100	500	1,000	10,000
Viewing hours cost	\$25.10	\$26.00	\$30.00	\$35.00	\$75.00	\$125.00	\$1,025.00
Tariff*	Pay As You Go						
Total*	\$25.10	\$26.00	\$30.00	\$35.00	\$75.00	\$125.00	\$1,025.00

Currently, Mux does not support live streaming in 4K resolution.

4K

Video transcoding calculation table, hours of original video:

Wowza H.264 HD	Hours						
	1	10	50	100	500	1,000	10,000
4K cost	\$30.00	\$75.00	\$275.00	\$525.00	\$2,525.00	\$5,025.00	\$50,025.00
Tariff*	Pay As You Go						
Total*	\$30.00	\$75.00	\$275.00	\$525.00	\$2,525.00	\$5,025.00	\$50,025.00

Video delivery calculation table, in hours watched by end viewers:

Wowza H.264 HD	Hours						
	1	10	50	100	500	1,000	10,000
Viewing hours cost	\$25.40	\$29.00	\$45.00	\$65.00	\$225.00	\$425.00	\$4,025.00
Tariff*	Pay As You Go						
Total*	\$25.40	\$29.00	\$45.00	\$65.00	\$225.00	\$425.00	\$4,025.00

Gcore Video Streaming

Gcore Video Streaming blends the flexibility of Platform as a Service (PaaS) with the scalability of Infrastructure as a Service (IaaS), offering enterprise-grade infrastructure to all customers. Billing is straightforward, based on a minute of video storage and delivery to viewers. Default transcoding is included at no extra cost for both live and VOD, with custom options available.

With our extensive network of data centers, Gcore has complete control over its infrastructure and entire streaming ecosystem, including video transcoding, CDN points of presence, cloud instances, and storage – which allows us to reduce overhead costs significantly. Gcore uses modern, scalable, and reliable hardware to ensure top-notch performance, and our team has the expertise to configure video delivery and optimize performance to meet your needs, allowing you to scale your reach to over 100 million viewers and beyond.

The following parameters are taken into account for transcoding and broadcasting:

- Live video transcoding up to Full HD quality is free. 4K transcoding is paid.
- Video delivery via CDN is estimated in minutes.

Thus, when using Gcore for streaming, you are only charged for the minutes you use. For instance, if a single user watches a 10-minute video, you will only be billed for the exact 10 minutes of viewing. This ensures that you don't have to pay for 10GB of data that goes unused. Our system efficiently delivers videos through an integrated CDN and provides comprehensive statistics for viewing. Another notable improvement from the previous study is the introduction of a public discount ladder.

Full HD

Video encoding calculation table, hours of original video:

Gcore H.264 HD	Hours						
	1	10	50	100	500	1,000	10,000
HD+SD+Audio cost (5 layers: 240, 320, 480, 720, 1080)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Tariff*	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total*	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Video delivery calculation table, in hours watched by end viewers:

Gcore H.264 HD	Hours						
	1	10	50	100	500	1,000	10,000
CDN	\$0.05	\$0.53	\$2.64	\$5.28	\$26.40	\$52.80	\$318.00
Total*	\$0.05	\$0.53	\$2.64	\$5.28	\$26.40	\$52.80	\$318.00

4K

Video encoding calculation table, hours of original video:

Gcore H.264 4K	Hours						
	1	10	50	100	500	1,000	10,000
4K cost (5 layers: 240, 320, 480, 720, 1080, 1440, 2160)	\$5.76	\$57.60	\$288.00	\$522.00	\$2,460.00	\$4,620.00	\$43,200.00
Total*	\$5.76	\$57.60	\$288.00	\$522.00	\$2,460.00	\$4,620.00	\$43,200.00

Video delivery calculation table, in hours watched by end viewers:

Gcore H.264 4K	Hours						
	1	10	50	100	500	1,000	10,000
CDN 4K	\$0.21	\$2.11	\$10.56	\$21.12	\$105.60	\$211.20	\$1,272.00
Total*	\$0.21	\$2.11	\$10.56	\$21.12	\$105.60	\$211.20	\$1,272.00

| Conclusion

In 2024, the landscape of live and VOD content streaming requires providers to optimize costs without compromising on quality. This white paper's detailed cost comparison of cloud video transcoding services and CDN delivery highlights significant differences among providers.

Gcore emerges as the best value, offering comprehensive services, including free Full HD transcoding and efficient CDN delivery, with transparent pricing based on actual usage. The company's extensive network and control over its infrastructure allow it to provide cost-efficient and scalable solutions, making it the most attractive option for broadcasters aiming to optimize their budgets and focus on core business tasks.

Conversely, some providers, like those with outdated pricing models or limited service offerings, present less value for broadcasters. Services that do not support 4K streaming or impose complex, multilayered pricing schemes can lead to higher costs and operational inefficiencies.

Selecting the right provider is crucial for broadcasters to manage their costs effectively, maintain high-quality streaming, and remain competitive in an increasingly demanding market. This comparison underscores the importance of evaluating service offerings and pricing models to ensure optimal value and performance in the ever-evolving streaming industry.

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