



OTT on Cloud Transcoding

OTT on Cloud: Transcoding in a Multidevice Universe

Today, viewers consume video content across a wide variety of devices and networks. On-demand delivery allows viewers to watch content when and where they have time – whether that's on the train during a morning commute or at the park while enjoying a packed lunch.

At the same time, consumers are eagerly embracing layered and interactive video services such as sports betting, live Broadway shows, and live selling. This requires that content be made available in different formats and resolutions, from large monitor displays to mobile phones, at varying network speeds.

To enable viewers to stream content without buffering and at the highest possible quality, content providers must improve device compatibility so that it includes users who have slower internet connections, ensuring the content can be viewed across a wide range of consumer devices.



Transcoding rolls out

This is where transcoding comes in. Transcoding converts one digital encoding format to another – translating the file format, video, and audio – in real time. It compresses files as much as possible with minimal quality loss to transfer information with less data, thus maximizing the number of compatible playback devices.

For example, a user with an older device may rely on the availability of low bitrates and resolutions. Some countries and internet service providers or mobile networks may cap or limit bandwidth. Transcoding allows content providers to deliver high-quality videos to users with faster internet speeds while also delivering lower resolution videos to viewers with slower data speeds (Figure 1).

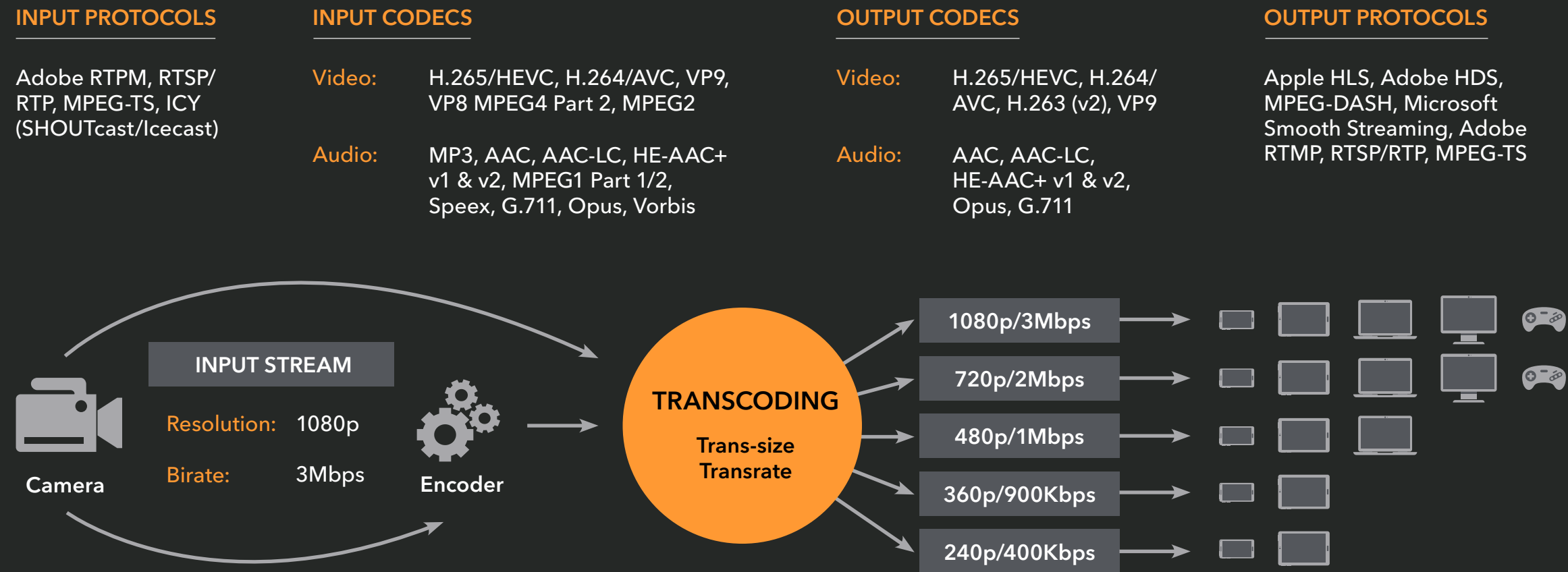


Fig. 1: Transcoding allows content providers to deliver videos in formats appropriate for all users

Transcoding is especially useful for over-the-top (OTT) service providers that provide live and interactive video services. Unlike traditional prerecorded content, live content does not have the luxury of advance buffering of segments of the content.

During a live show, viewers with limited bandwidth or slower data may face buffering or may not be able to view the live stream at all. With transcoding, OTT content providers can deliver a set of time-aligned video streams with different bitrates and frame sizes, ensuring that live streamed content is device-agnostic.



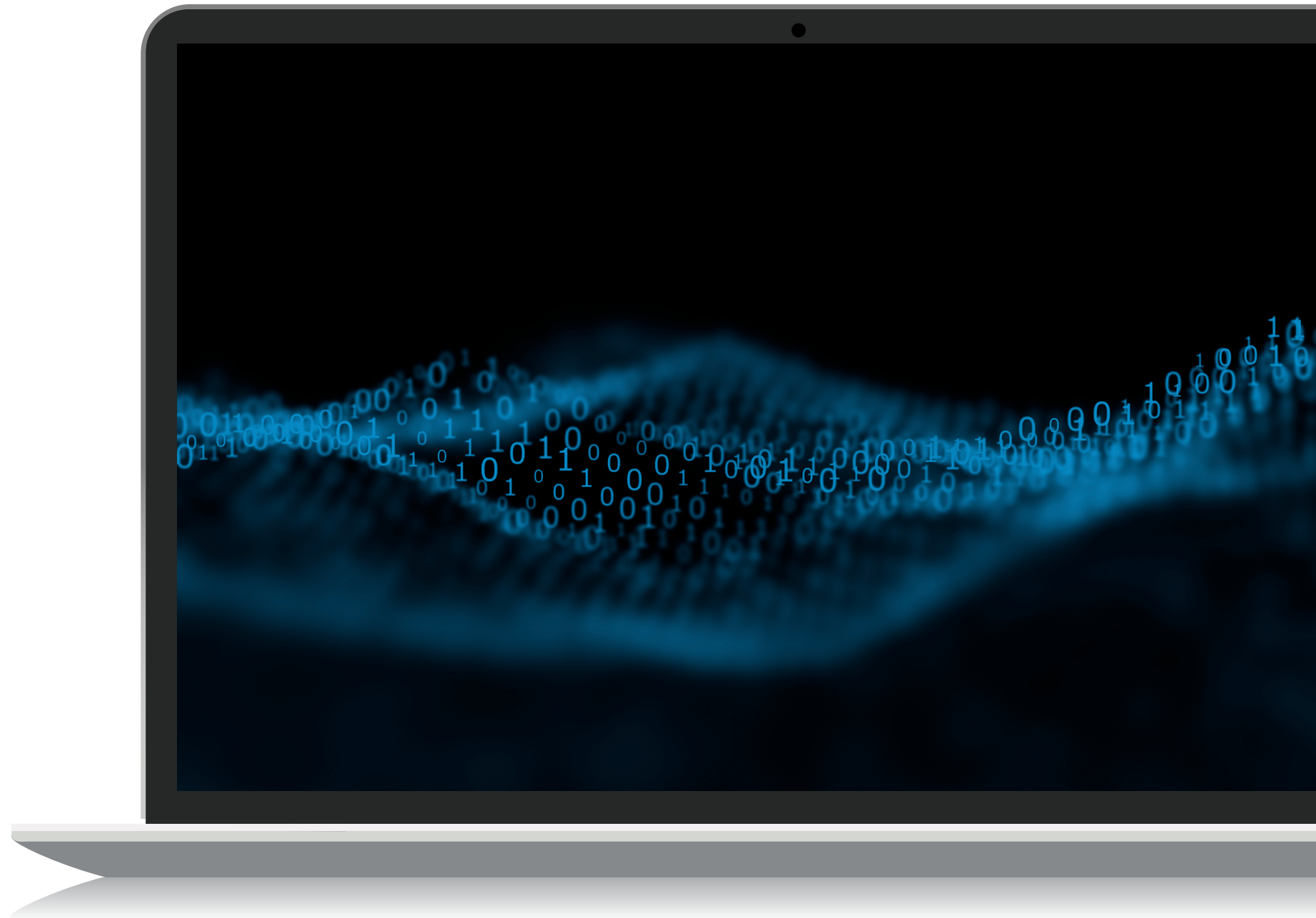
Transcoding challenges today

Generating multiple formats and bitrates in a timely manner can have a positive impact on user experience – if performed correctly.

However, transcoding is a CPU-intensive workload and can be a cumbersome process that can create an issue of storage capacity, especially with the increasing popularity of video and live, interactive content. This type of content consumes a large amount of bandwidth and device memory during transmission over the internet.

Content providers must balance the speed of transcoding with the cost of CPU time required. As billions of users create and use massive volumes of video and live stream content, video compression is a critical technology in managing skyrocketing bandwidth requirements.

In addition, as the consumption of video content continues to increase, existing hardware-based resources in today's content workflows may not scale to meet demand.





Local vs. cloud transcoding

There are two ways to transcode your content – locally or in the cloud.

Although local transcoding is generally less expensive, it may be slower to produce because multiple file versions need to be created, taxing an encoder's CPU.

Cloud transcoding offers scalability, cost-effectiveness, and flexibility. When streaming live events, the content provider may not be able to perform multipass encoding without introducing significant latency.

Cloud transcoding creates several renditions of the same video formatted to different sizes and resolutions so the end viewer receives a version optimized to their network connection and device capabilities. This happens in real time to support live streaming. The viewer gets the sharpest possible video with no interruptions – ensuring a high-quality experience.

Cloud transcoding

– at a price?

Cloud transcoding can also help reduce costs, in general, by removing capital costs on new hardware or software, and by reducing operating expenses.

However, the transcoded video streams are large, and result in substantial egress. Although most cloud providers allow free data ingress, the downloading or moving data off of the cloud may come at a high cost.

Egress charges can be a hidden cost of cloud computing. Transcoding workloads are also often variable, with substantial usage at peak times and lower usage at others; therefore, transcoding is not always needed.

In fact, egress costs for these types of workloads tend to be a substantial part of customers' cloud charges. Egress costs matter as they vary greatly, especially when there is a spike in the transcoding workload, making cost estimation a challenge.

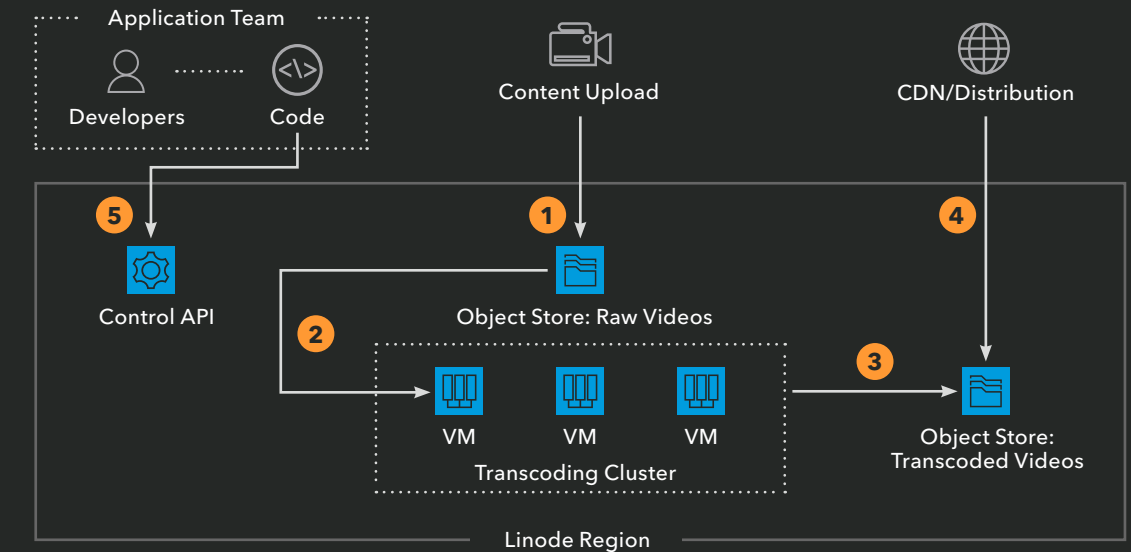


Akamai Connected Cloud offers a pay-as-you-go model

Media organizations regularly face peak periods when there is a need to scale transcoding capacity quickly. This can challenge any IT department when making investment decisions about new cloud storage space, streaming software, and so forth.

Akamai Connected Cloud can improve transcoding performance without increasing costs. The pay-as-you-go model is more cost-effective for bursty, periodic workloads. This cloud transcoding architecture remains scalable to any possible bursts, allowing content providers to confidently plan and budget with simple, transparent pricing to avoid an unexpectedly large bill.

Content is static. Today's OTT content providers need to focus on delivering a modern, interactive, and multidirectional experience.



- 1 Raw live or on-demand videos are uploaded to a local, dedicated object store that houses incoming videos that must be processed.
- 2 Virtual machines (VMs) running the desired transcoding software monitor the incoming object store for new videos that require processing.
- 3 Transcoded videos are placed in dedicated object storage and are ready for delivery to the client.
- 4 Optional: CDN is used to cache, distribute, and control access to video library.
- 5 Linode automation API allows infrastructure to be managed and new code versions to be deployed.

KEY PRODUCTS

Compute ► Shared VM
Storage ► Object Store
Optional:
CDN ► Adaptive Media Delivery

Fig. 2: Media organizations can now transcode content near the network edges



Akamai's edge computing allows media companies to stream content with low latency because it stores the content on servers that are physically closer to other networks and end users, including those using networks that offer lower connection speeds. Media organizations can now transcode content near the network edges and distribute them almost immediately, providing near real-time compute and improved cache hit ratios (Figure 2).

This is a fundamentally different approach to the cloud computing market than other providers who base their platforms solely on fewer, more distant core data centers.

Keep **experiences** closer to users

Akamai offers the world's most distributed platform, placing compute, storage, database, and other select services closer to end users and enterprise data centers, which provides single-digit-millisecond latency and global reach.

The end result: keeping experiences closer to the users – and threats farther away.

Akamai's global network for content delivery and favorable egress costs mean that media organizations can continue to actively invest in creating content to satisfy the ever-increasing consumption of streaming and live video experiences without worrying about a surprise bill from their cloud transcoding provider.



Akamai powers and protects life online. Leading companies worldwide choose Akamai to build, deliver, and secure their digital experiences – helping billions of people live, work, and play every day. Akamai Connected Cloud, a massively distributed edge and cloud platform, puts apps and experiences closer to users and keeps threats farther away. Learn more about Akamai's cloud computing, security, and content delivery solutions at akamai.com and akamai.com/blog, or follow Akamai Technologies on [Twitter](https://twitter.com/Akamai) and [LinkedIn](https://www.linkedin.com/company/akamai).