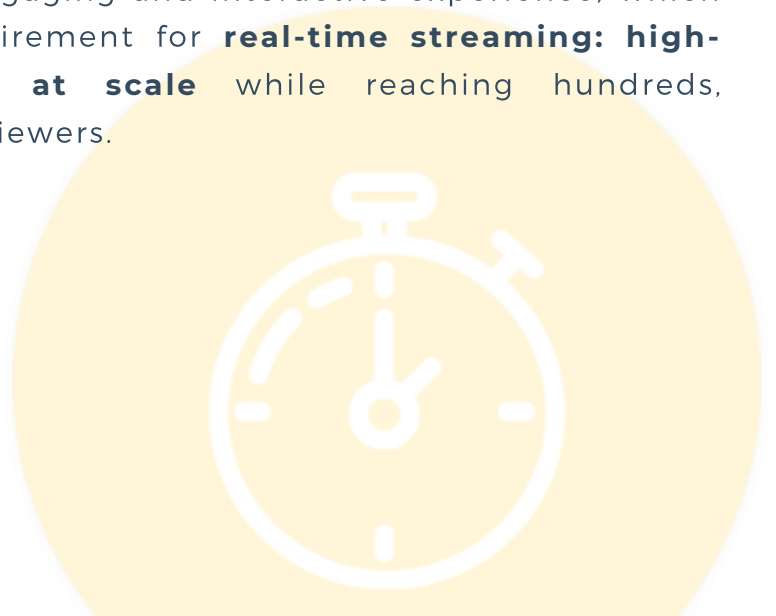


# EMBEDDING HIGH-QUALITY REAL-TIME VIDEO AT SCALE IN YOUR APPLICATIONS

## *How THEOlive makes it easy to stream real-time to any audience size*

There has been a drastic shift in the way we consume online content and, as we all witnessed, this change accelerated during the last years. Demand for interactive experiences is increasing and will continue to increase as the viewer's needs and behavior shift. These days you can access online slot games and tables from anywhere in the world, and join a live auction or an interactive online event. Following the return to physical events, companies still continued hosting virtual events, many at least focusing on hybrid approaches. According to Statista, almost one-third of trade shows worldwide were staged as hybrid events in 2021. When looking at the growth of other interactive online experiences, we see in-game sports betting is anticipated to grow significantly, as wagering became legal in 11 new U.S. states in 2021.

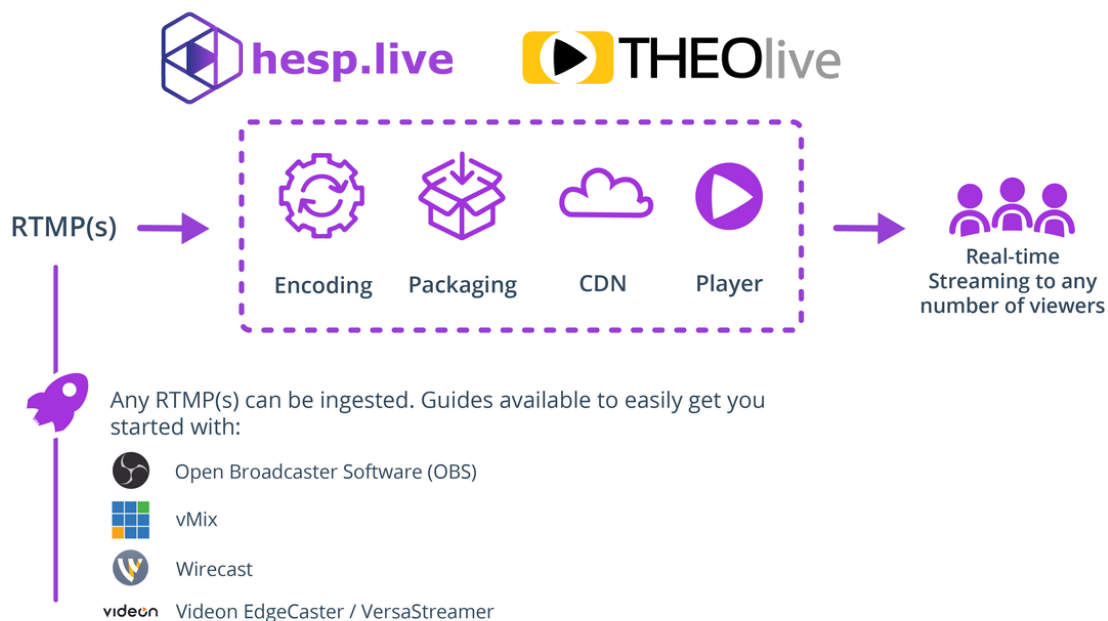
The shift towards more interactive streaming experiences accentuates the increasing viewer's expectations. Today the primary complaint with watching live events online is the delay of high-quality video streams. The viewer frustration aside, the streaming latency is an inhibitor to making online video a more engaging and interactive experience, which brings us to the general requirement for **real-time streaming: high-quality sub-second latency at scale** while reaching hundreds, thousands, or even millions of viewers.



# THE CHALLENGE OF LOW LATENCY LIVE STREAMING

Low latency live streaming is typically seen as a challenge due to the trade-off between desired low latency and scalability. **Do we always need to sacrifice latency for scalability or vice versa?** Solutions leveraging HTTP-based protocols such as LL-HLS and LL-DASH are very scalable to any audience size. While suited well to deliver streams at a broadcast-like latency of around 6 to 8 seconds, these do not provide for sub-second latency. On the other hand, solutions using WebRTC as underlying technology bring real-time streaming but are complex and expensive to scale as each client requires a persistent connection with the backend, and scaling takes place by spinning up additional server infrastructure instead of using a commodity CDN.

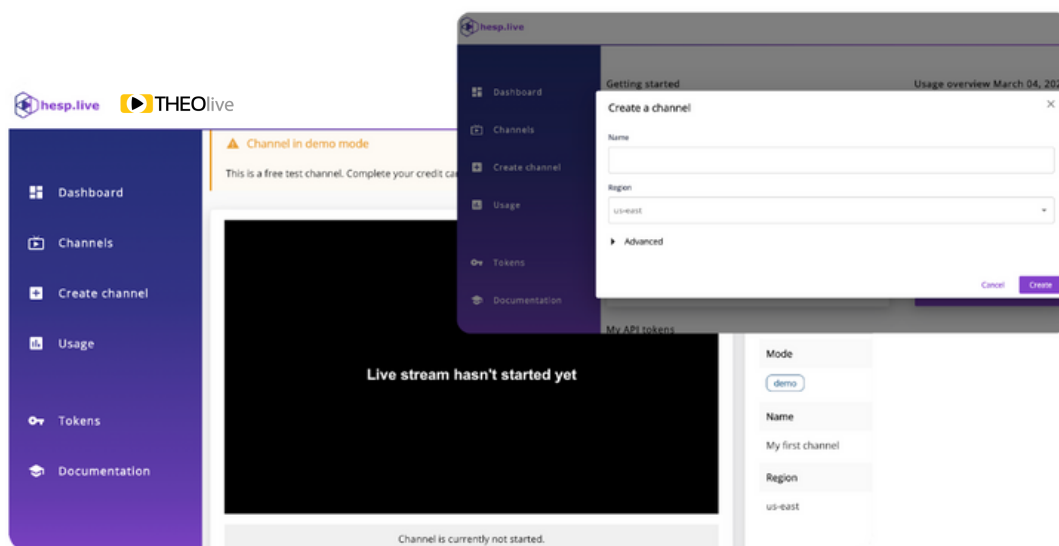
In practice, setting up a real-time streaming solution takes time and expertise, and not every company has an in-house expert team.



# AN EASY AND AFFORDABLE PATH TO REAL-TIME STREAMING AT SCALE

This is where THEOlive emerges as an essential solution for real-time streaming at scale. THEOlive is an end-to-end cloud-based video API, which leverages the High Efficiency Streaming Protocol (HESP) and covers the full pipeline from video ingest and distribution over a global CDN, to high-quality video playback and extensive scaling. THEOlive is designed to make real-time streaming at scale easy. It's an API-first solution, which brings the video infrastructure of large media companies to any developer so that they can easily embed high-quality real-time video to any audience size in their applications.

It's by leveraging the High Efficiency Streaming Protocol, which is an HTTP-based streaming protocol, that THEOlive is able to **easily and cost-efficiently scale to any number of viewers** over a global CDN. HESP also helps THEOlive achieve its sub-second latency by combining two streams: an initialization stream and a continuation stream. Leveraging chunked transfer encoding with byte-range requests, it is possible to very quickly start a stream or to change qualities upon changing network conditions. As a result, lower player buffers are needed to bring the same viewer quality of experience, and hence lower latencies can be achieved. The entire THEOlive workflow, from encoder, to HESP packager, CDN, and HESP player has been optimized for sub-second latency.



# HOW DOES THEOLIVE WORK?

Getting started with THEOlive is straightforward and can be completed in a few simple steps, through the management console, or through API:

1. **Sign up:** Create an account on the THEOlive management console.
2. **Create your channel:** Once you have access to the management console, you can create your first channel by clicking "create channel". Here you can select an ingest location and enter a name for the channel. There are also a few advanced settings where you can set up whether or not to use ABR, select a value for FPS and choose the right resolution. When ABR is selected, THEOlive will automatically generate a bitrate ladder to optimally serve viewers with various network conditions.
3. **Configure your RTMP(S):** After creating your first channel, you will be directed toward the details page of your newly created channel. Here you can find details to configure your RTMP. You can ingest any RTMP; guides are available to easily get you started with **OBS Studio**, **Videon Edgecaster**, **Wirecast**, and **Vmix**.
4. **Embed the player in your webpage:** The last step is including your THEOlive channel on your page by using the embed script and the channel ID. In this step, you can also **customize your player**. Some of the things you can easily change to adapt the look and feel are the colors of your player, adding a logo, poster image, or announcement message, and enabling/disabling auto-play. There are more customization options available through a **self-hosted player**. In reality, this step can be boiled down to a simple copy-paste of the embed code, which is generated.

That's it! You can start streaming by following these four simple steps. As THEOlive is API-first, each of the above steps can also be completed via API calls, which are documented in the **API reference**.

High-quality real-time streaming at scale is key in bringing interactive viewer experiences for use cases such as sports betting, virtual conferences, online auctions, and gaming. Solutions like THEOlive make it easy and affordable for live streaming services to get started and to stream real-time to any audience size.

## ABOUT THEO TECHNOLOGIES

THEO Technologies empowers the world's leading media and entertainment companies to deliver cutting-edge video services, efficiently and on any device.

THEO is continuously striving to disrupt the industry benchmark. After creating the most scalable Ultra Low Latency Protocol, called HESP, THEO launched **THEOlive** (hesp.live) to their product range. **The first and only HTTP-based video API**, delivering live stream video with sub-second latency at scale.

Our flagship product - THEOplayer - is trusted by leading payTV and OTT service providers, broadcasters as well as Sport and Event organizers worldwide. Delivering top-notch, feature-rich, interactive and smooth video playback on every connected device.

Visit **[www.hesp.live](http://www.hesp.live)** or try it yourself by signing up on **hesp.live console**.



# INTERESTED IN DELIVERING HIGH- QUALITY REAL-TIME VIDEO AT SCALE?

Get in contact with one of our THEO experts.



**PIETER-JAN SPEELMANS**  
CTO & Founder



**BART VAN OOSTERHOUT**  
VP Product Management

[Ask an expert](#)