

# Fast Deployments in Emerging Markets

Zenlayer enhances real-time interaction for audio and video service provider ZEGO



## About ZEGO

ZEGO is a professional audio and video cloud-service provider. The company specializes in providing stable, high-quality, real-time audio and video cloud services across the globe. It assists enterprises in rapidly acquiring interactive live-streaming capabilities and pioneered global multi-host live broadcasting streaming. ZEGO has 18 years of technical experience in the audio and video field and its independently developed audio and video engine is internationally recognized for its audio and video preprocessing, network self-adaptation ability, and cross-platform compatibility.



### Global distribution

ZEGO provides one-stop audio and video cloud services for more than 500 enterprises across more than 200 regions.

### Broad coverage

Connecting 500+ million end users worldwide, ZEGO's audio and video interactions exceed 2 billion minutes each day. They boast coverage of 70% of industry-leading customers in domains such as live streaming, social networking, game finance, medical care, government affairs, conferences,

### Ultra-low latency

ZEGO has built an end-to-end virtual audio and video network at the global level, achieving smooth, high-definition, low-latency, real-time interactive experiences, even on diverse hardware with variable network statuses.

### Overseas live streaming

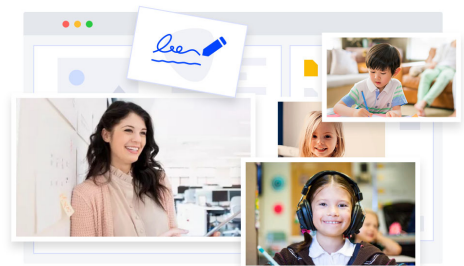
Users around the world can access the live-streaming application from different devices and network environments. With abundant networking resources, ZEGO has built up a global signaling data acceleration network, ensuring global users can log in instantly at any time and indulge in real-time interactive live experiences with up to 44.1 kHz full-band sound and 1080p high-definition graphics.

### Transnational education

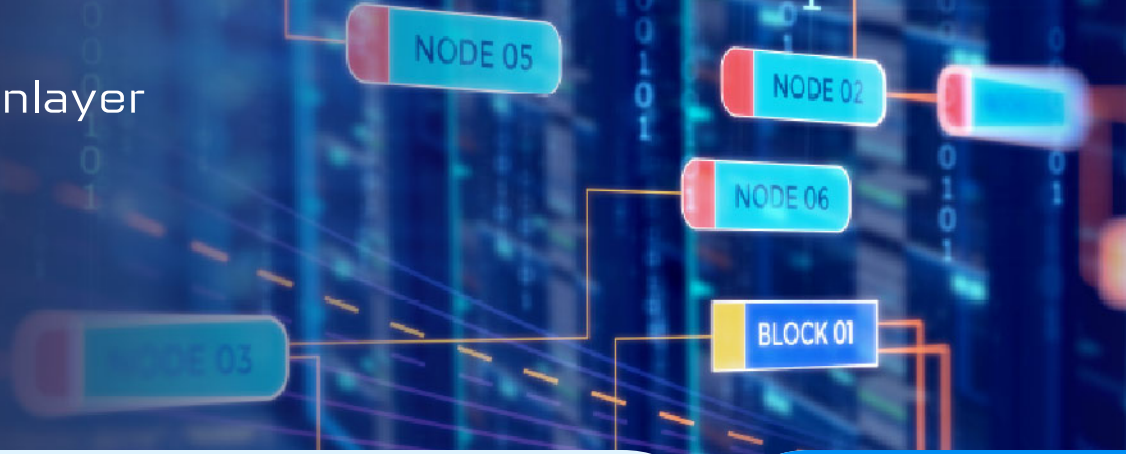
Teachers and students can broadcast and watch live lectures around the world, including real-time Q&A. ZEGO boasts stable and smooth audio and video regardless of location. Users can seamlessly switch between resolutions and view multiple video streams at once. It's easy to set up the app for one-on-one education, a small class with lots of interaction, and/or large-scale lectures.

### Global gaming

ZEGO uses more than 500 BGP (Border Gateway Protocol) routers, allowing game publishers to take their games abroad while enjoying the same low latency and as in China. The routers ensure low latency for competitive gaming - 90% are within 300 ms, with a maximum of no more than 700 ms. Low-latency, low-cost solutions can be tailored to different game requirements, such as co-operative playing with simultaneous control, "mic grabbing" between differ-







## Summary

ZEGO assists global enterprises rapidly acquire stable and high-quality live streaming capabilities in more than 200 regions. To better serve their 500+ million users, ZEGO used Zenlayer to quickly deploy and connect 22 core and edge PoPs in Europe, America, and Southeast Asia.

By doing so, they established a stable, low-latency, dedicated network with access to the best local carriers and improved end-to-end real-time interactive audio and video experiences for users even under complex network environments.

At the same time, Zenlayer helped ZEGO reduce operation and maintenance costs, increase operation efficiency, and expedite technology developments and upgrades, allowing ZEGO to further expand its global footprint.

## Challenges

### Regional infrastructure gaps

The regional network environment between user locations plays a key role in determining the quality of real-time experiences. How could ZEGO deliver the same high-quality, low-latency service in emerging markets such as India, Indonesia, and Brazil as they could in established markets like Europe?

### Network infrastructure in emerging markets is limited

Emerging markets such as India, Indonesia, Brazil, the Middle East, South America, and Africa face many challenges compared with competitive, mature markets. 4G service is not widely available and 2G service is still common, meaning applications must contend with lower network speeds. Some markets have expensive network tariffs, complicated data protection policies, and/or limited suppliers. Connections between cities and regions are often sparse.

## Consistent audio & video experience from end to end

It only takes one second of lag during an online interaction to make communication feel asynchronous and frustrate users. Video latency must be under about 200 ms (or 400 ms round trip) to be truly interactive.



## What causes audio and video latency?

Some latency is unavoidable, even with optimal conditions.

**50 ms** - Sending client processing (acquisition, coding, buffering)

**30 ms** - Transmission (limited by the speed of light)

**10 ms** - Network processing

**10 ms** - Application processing

**50 ms** - Receiving client processing (acquisition, coding, buffering)

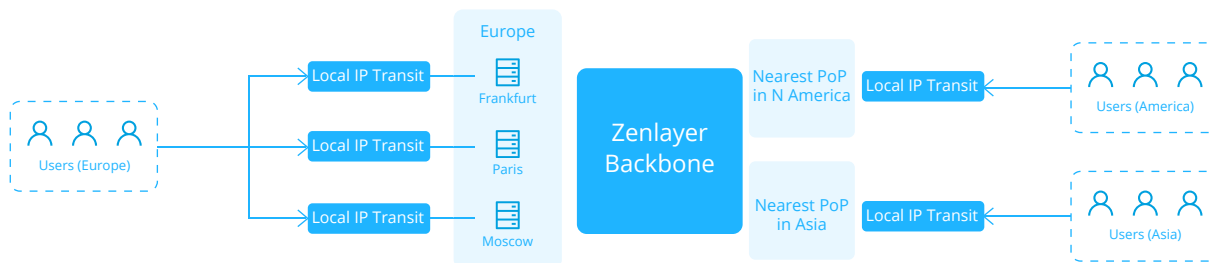
**Total: 150 ms**

## Solution

Zenlayer quickly deployed and connected 22 core and edge PoPs in Europe, North America, South America, and Southeast Asia. This established a stable, low-latency, dedicated network; access to the best local carriers, particularly important in emerging markets; and improved end-to-end interactive audio and video experience for users around the world in complex network environments.

## Why Zenlayer?

- As the world’s most extensive edge cloud service provider, Zenlayer currently operates 180+ PoPs in 35+ countries, which enabled ZEGO’s global deployment needs to be instantly met.
- Zenlayer in-house experts have in-depth understanding of local internet exchanges, ISPs, telecommunications operators, and data centers, especially in emerging markets.
- Zenlayer provides standardized operation and maintenance services around the world. ZEGO could rely on Zenlayer’s 24/7 bilingual technical support team for immediate problem resolution.



## Instant bare metal servers

Zenlayer activated dedicated bare metal servers for ZEGO within one hour of each request.

- Southeast Asia: Ho Chi Minh City, Hong Kong, Jakarta, Manila, Taiwan
- North America: Chicago, Dallas, Los Angeles, Miami, Seattle, Washington D.C.
- India: Chennai, Bengaluru, Hyderabad, Kolkata, New Delhi
- Middle East: Dubai
- South America: São Paulo
- Europe: Frankfurt, Madrid, Moscow, Paris

## Simplified maintenance and lower costs

With on-demand server activation, flexible billing service terms, direct connections between servers, and a single point of contact for concerns, Zenlayer both simplified maintenance and lowered operation costs for ZEGO.

## “Wow” service

Zenlayer did more than provide global servers and bandwidth. The team worked with ZEGO to provide in-depth technical consultation in the preliminary stage, created a customized technical solution to meet ZEGO’s needs, used their strong relationships with global carriers to provide advance testing, and throughout the process was available to quickly respond to ZEGO’s questions and requirements.



## Results

All of ZEGO's key performance indicators were immediately improved, including sound and graphics quality, latency, packet loss, and network adaptability. Customer satisfaction increased by an impressive 35%.

ZEGO is building an ecosystem of "X+ audio and video" to enable integration of real-time audio and video with industrial applications. Zenlayer will continue to provide edge services for ZEGO, bringing users around the world closer together and enabling ZEGO to further expand their business.

"Zenlayer has established numerous data centers worldwide which serve Chinese enterprises going abroad. By working with Zenlayer, not only was ZEGO able to better control operating costs, but we could expand our overseas business presence. Thank you for your excellent global operation capabilities and ability to provide us with stable and high-quality network resources and IDC services."

- ZHAO Rui, ZEGO Operation & Maintenance Manager

## By the Numbers

200 Servers

22 Edge PoPs

10 Gbps Daily bandwidth peak

25% Latency reduction

35% User satisfaction improvement

30% Operation and maintenance cost reduction

0 Times ZEGO needs to visit a regional data center

