

# Multimedia Cloud Solutions

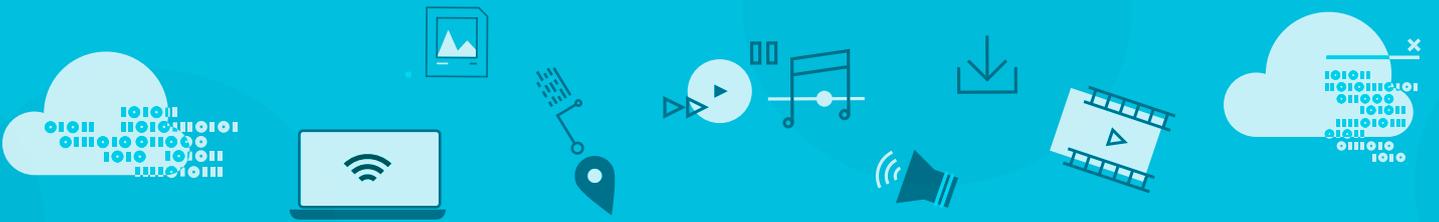
## About Cloud-based Multimedia Solutions

Multimedia content is growing exponentially in terms of size and volume, and is an important part of our digital experience. Connectivity and accessibility are fundamentals that facilitate the integration of multimedia into our daily lives.

A significant amount of computation though is required to effectively cater millions of user requests to access multimedia files. Interactive communications, rich web pages, software downloads, and an ever-growing scope of digital media need a new approach to content delivery, rather than relying on traditional on-premise server resources.

The revolution in high-speed Internet network and the evolution of cloud computing has resulted in the inadequacy of traditional solutions. The multimedia industry is now moving rapidly towards the cloud. The cloud offers multimedia providers optimum performance during peak workloads, rapid scalability without resource wastage, and cost-effective resource provisioning.

Cloud computing ensures the availability of multimedia to one and all, supporting a multitude of functions including audio, video, animation, gaming, and other digital communication. The cloud also offers ample storage, elastically scalable computing, extensive network capabilities, as well as lower costs for businesses.



## Challenges

User experience in online multimedia depends on the availability and speed of the applications. Traditional solutions often face lag time and downtime that dilutes engagement levels on the user end. Orchestrating high-quality audio and video files through traditional means is cumbersome, time-consuming, and highly expensive.

Specific challenges also exist among popular multimedia categories hosted on traditional infrastructure.

### Video Surveillance

Video surveillance, the backbone of security systems today, allows organizations to carry out real-time monitoring activities. Traditional monitoring solutions are typically built on Local Area Networks (LANs), servers, VCRs, and cameras. These solutions require a significant amount of time and cost to manage and maintain.

### Video on Demand (VOD)

VOD refers to immediate downloading and viewing of videos for real-time or future consumption. On-demand downloading and viewing helps business processes thrive in a customer-centric environment. However, a robust back-end infrastructure is imperative to handling periodic business load fluctuations.

Traditional infrastructure is often susceptible to delays in simultaneous video uploading, processing, streaming, and playing. Additionally, complexities of the network environment often result in a poor user experience.

### Live Video Broadcast

Live video broadcast, or live-streaming is the next big thing in the multimedia industry. Traditional broadcasting solutions involve satellite communication and the Internet. Transcoding using physical transcoders is both high-maintenance and unyielding. A diligent cloud solution provider is necessary to drive an effective live-streaming ecosystem with high network quality, low latency, and smooth transcoding of streamed data.

## Why Alibaba Cloud

As a global leader in cloud services, Alibaba Cloud provides tailored solutions for the online multimedia industry. Its competitive cloud storage capabilities, elastic computing, abundant bandwidth resources, and sophisticated security control mechanisms give multimedia providers access to an advanced cloud ecosystem. Alibaba Cloud offers global coverage with 13 data centers and 530 CDN nodes to minimize application latency.

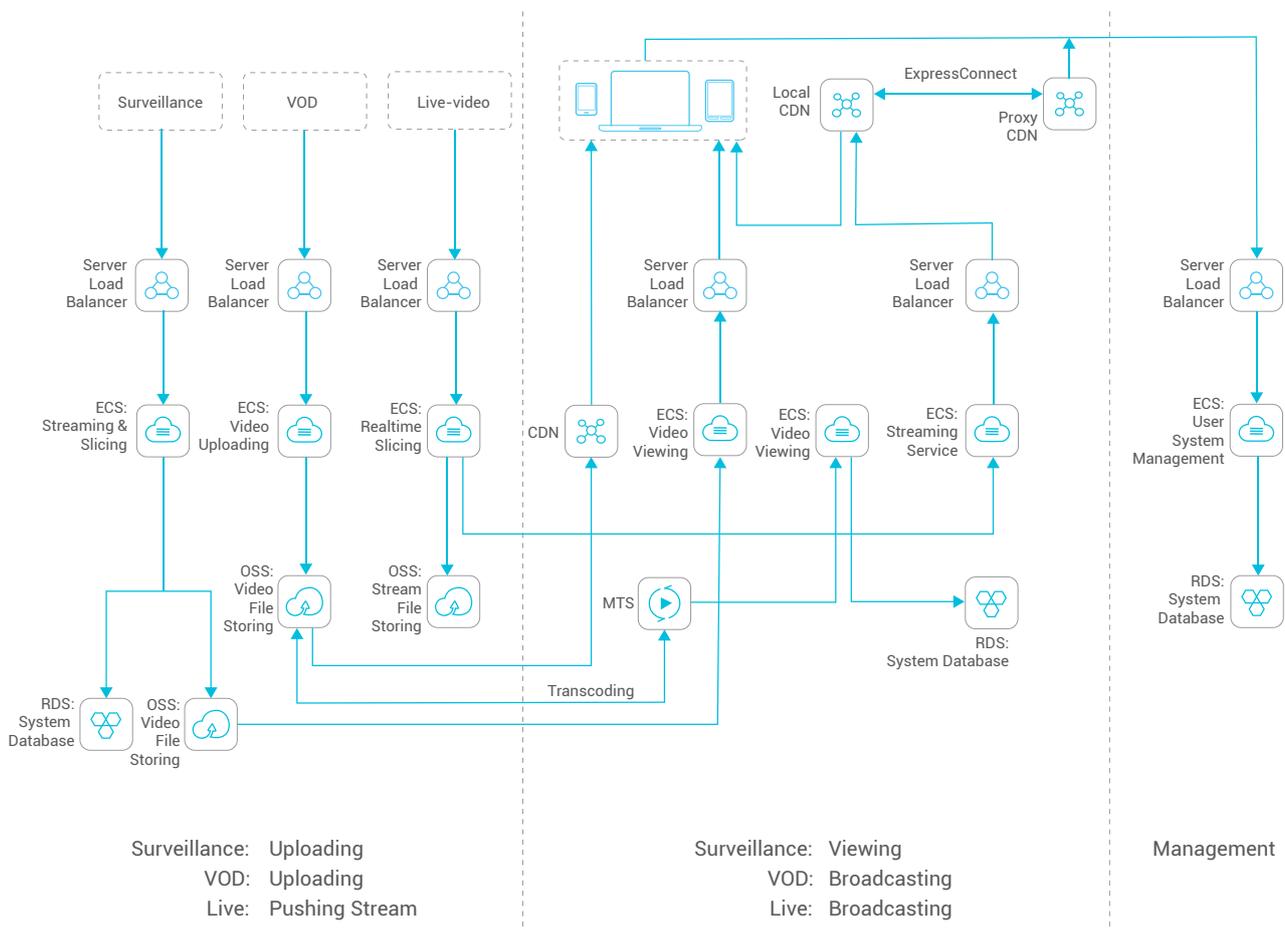
Being the most advanced cloud network in China, Alibaba Cloud's cloud infrastructure offers quick access and smooth streaming of low-latency and high-concurrency live video broadcast solutions within Mainland China. This allows users to quickly and efficiently construct low-cost live video broadcast platforms without any delays. Users can manage and monitor infrastructure of platforms hosted in multiple regions, including the Middle East, Europe, America, Asia, and Australia through a single global account.

Alibaba Cloud provides a host of services especially customized for VOD solutions. Its exemplary CDN and storage infrastructure capabilities through products such as Object Storage Service (OSS), enable enterprises to support millions of concurrent viewers while ensuring an enriching user experience and managing potential spikes in traffic.

Over and above all this, Alibaba Cloud offers stringent data security. This is the most pressing challenge and naturally the most important concern for multimedia providers, especially regarding digital rights management. As a Singapore registered company, Alibaba Cloud complies with high-level international certifications to guarantee data security, including Gold Certification in Cloud Security from the British Standards Institute. Alibaba Cloud is also the only international cloud provider in China to manage all data security processes in-house, and is the first local provider in China to achieve ISO27001 Information Security Management System Certification.

## The Solution - Alibaba Cloud Deployment Architecture

The following is a reference architecture diagram describing solutions for all three scenarios: Surveillance, VOD, and Live-streaming.



## Surveillance

The video storage module uses a Server Load Balancer and Elastic Compute Service (ECS) cluster to receive video streams uploaded by IPCs. The Server Load Balancer supports uplink bandwidth in the GB range. The uploaded video streams are distributed by the Server Load Balancer to ECS instances for segment storage. Video segments are stored on Object Storage Service (OSS), and the segment index is stored within an RDS database. The video viewing module creates an external web service that equips user terminals with real-time viewing capabilities. This module's Server Load Balancer instance receives access requests from user terminals and submits them to web servers (ECS instances) for processing. The web server performs user and device verification, and then retrieves the video index database and searches the video index. Finally, it extracts the required video from OSS and returns it to the terminal.

## Video on Demand

This module takes care of video uploading, video broadcasting, and system management. It uses a Server Load Balancer and ECS architecture to construct a high-availability VOD web service. In the video uploading module, video files are uploaded to a web page on the platform and stored on OSS, which provides PB-level video file storage capabilities. An RDS database stores the segment index. OSS can then directly integrate with Media Transcoding (MTS) and Content Delivery Network (CDN) to provide video file transcoding and delivery capabilities. To adapt to different business loads, this architecture possesses elastic scaling capabilities for each module to be able to expand without any limits. This module's Server Load Balancer instance receives access requests from user terminals and submits them to web servers (ECS instances) for processing.

## Live-Streaming

In pushing live-streams, a Server Load Balancer with ECS architecture can be used to construct a real-time video segmentation cluster for segmenting video streams pushed by clients and later stored on OSS. In video broadcasting, authenticated users request live-streaming, then a real-time video segment is converted to an HTTP Live Streaming (HLS) format and pushed to CDN to serve the request. The proxy service automatically distributes the live-stream to a peer CDN using Alibaba Cloud ExpressConnect to ensure maximum quality data transmission for international live video broadcasting.

## Key Benefits



Reduces development costs with unlimited scalability for transcoding, storage, delivery, and other functions



Smooth playback experience delivered by on-demand audio and video incremental services



High-speed audio and video downloads using content acceleration



Pay-As-You-Go payment model with minimal maintenance and configuration requirements



High-level of flexibility and customizable options



Smooth migration for live broadcast



Significantly lower development costs



ExpressConnect ensures low latency, stable quality, and high transmission quality

## Customer Testimonial

“ Before hosting our platform on Alibaba Cloud, we were experiencing substantial network delay, high packet loss and a significant lag in real-time video interactions between tutors and students. With powerful underlying network connectivity provided by Alibaba Cloud's data center service and ExpressConnect, real-time video communication between tutors and students across different countries is now much smoother. ”

- Michael Birdsall, CEO of TwoSigmias

Are you looking for a similar solution?

TALK TO OUR EXPERTS NOW

Explore similar user cases

VIEW MORE CASE STUDIES