

WOWZA AT SCALE



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Wowza at Scale

Wowza Overview

Wowza Video is a video solutions provider committed to powering live streaming and more for today's most innovative companies. With more than a decade of experience deploying more than 38,000 streaming implementations, our full-service platform is the gold standard for video technology. We provide the performance and flexibility today's businesses require to engage their audiences, increase revenue, and invent new opportunities.

Nearly 1/3 of CDNs globally have Wowza built in, and Wowza powers or partners with 70% of providers on Gartner's Enterprise Video Content Management Magic Quadrant. What's more, broadcasters in more than 1/3 of the world's nations rely on our technologies.

At the heart of our platform is Wowza Streaming Engine software. This streaming server software can sit in any environment — whether it is a global network of servers or our own Wowza Video platform. Let's take a closer look at how this works.

Scaling Overview

1. Single Server

In the simplest use case, a single instance of media server software can be used to ingest a single live source; transcode, transrate, and package the content in real time to produce the final formats; and deliver this data to viewers across a range of devices for playback. This option works for small-scale streaming across a limited geographic area. But when delivering to large audiences across the globe, broadcasters often rely on a CDN to remove the bottleneck of traffic that results from delivering streams with a single server.

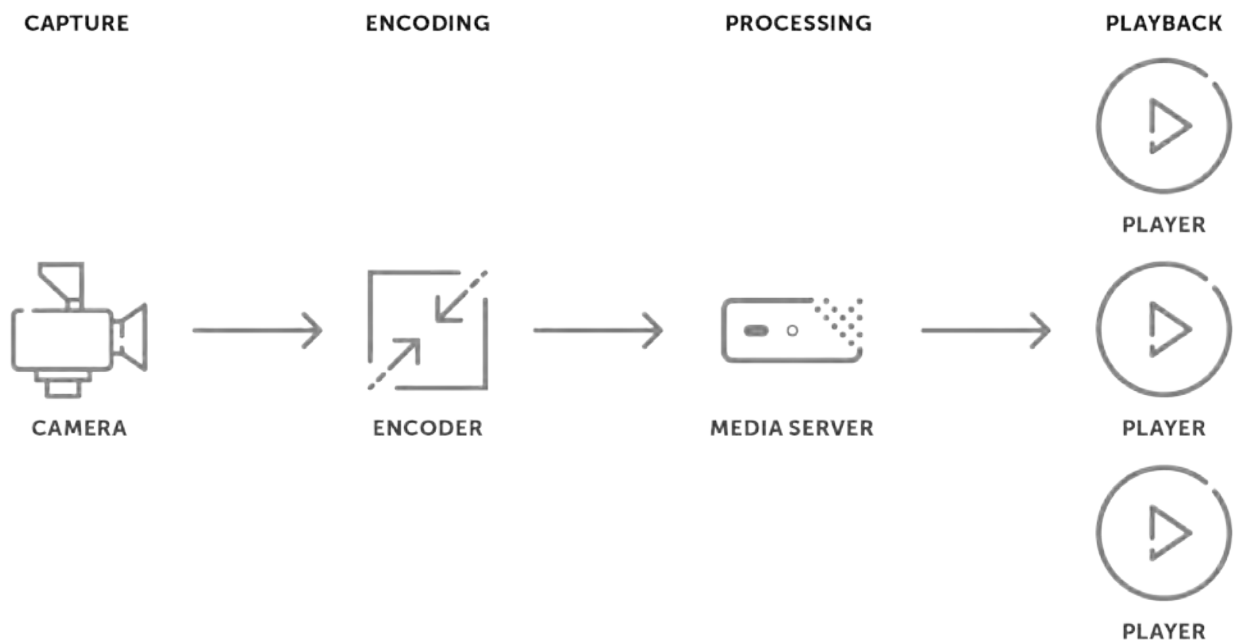


Figure 1: Single Server Workflow

2. CDN

CDNs use large networks of servers placed strategically around the globe to optimize last-mile delivery. As the audience size increases and becomes geographically diverse, more edge servers are required to efficiently transport content. Distribution efficiencies (network and otherwise) may also require middle-tier servers, as the origin is not always the quickest route for acquiring content that hasn't been cached at the edge.

3. Media Processing Origin Layer

Additional origin servers may come into play to optimize first-mile contribution. While processing is sometimes done at the edge, this more often occurs at the origin. Many broadcasters choose to deploy a media processing origin layer — that is separate from the CDN architecture — for even greater scalability. Once streaming content leaves the origin layer, it's transported to the most suitable CDN entry point for streamlined delivery.

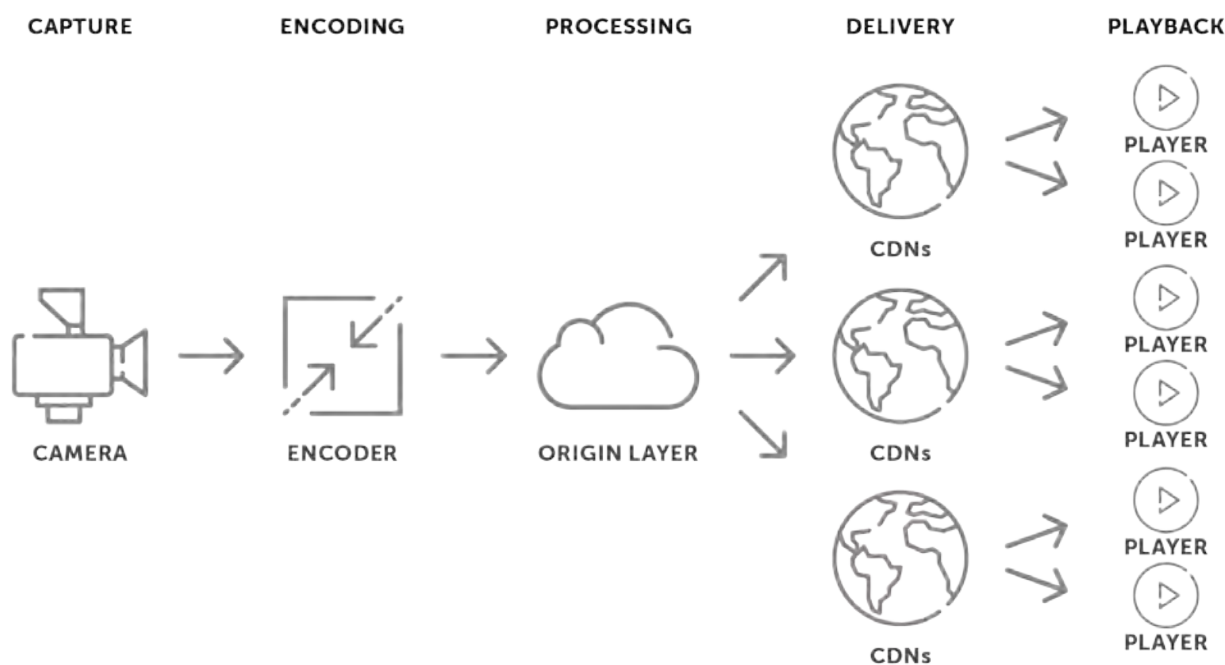


Figure 2: CDN and Origin Layer Workflow

Streaming at Scale With Wowza

As media server software that can be deployed on premises or in the cloud, Wowza Streaming Engine is optimized for scalability and tightly integrated with CDNs. This customizable software powers live and on-demand streaming for multi-device delivery.

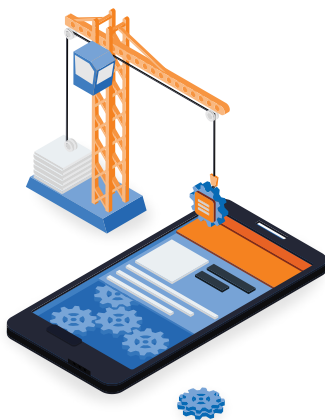
Common distribution techniques can be leveraged, defined by functional requirements and technical details (such as the streaming protocol in use). We offer options for scaling both media processing on the origin and media delivery on the edge.

1. Scaling Media Processing

Load balancing allows content distributors using more than one instance of Wowza Streaming Engine software in a cluster to adapt the streaming workload distributed across servers based on available resource. There are various types of load balancing solutions that can be used individually or together, depending on how large and distributed the server cluster is.

Load balancing includes the ability to add and subtract servers based on the load, optimize for first-mile routing by selecting the best location to connect to, and protect against disruptions in stream traffic.

For all of the load balancing capabilities described above to work, the system will need to know which locations are in-service and the capacity of each server. Additional steps in a streaming workflow that require CPU, such as content protection, could also impact scalability.



2. Scaling Media Delivery

One distribution method available when using Wowza Streaming Engine is HTTP Origin for scaling media delivery on the edge. HTTP Origin mode allows third-party HTTP proxies to cache and re-stream video content via integration with a CDN.

While both of the options described below allow the origin server to communicate with a destination endpoint, the HTTP caching origin feature allows edge servers to pull streaming data from the origin, whereas the Stream Targets feature involves pushing streams to a third-party destination.

HTTP Caching Origin

Content distributors can configure their server to act as the origin to an HTTP caching infrastructure for delivery of live streams using HTTP-based adaptive bitrate protocols. This allows edge servers to pull HTTP chunks directly from the origin and cache them locally.

Stream Targets

The Stream Targets feature allows content distributors to select one or more destinations — such as a third-party CDN — to distribute the live stream. This one-in-many-out approach ensures scalability with ease.

Available Stream Target destinations include:

- CDNs
- Wowza Video
- Social media websites such as YouTube Live or Facebook Live
- Another single destination in a point-to-point connection (this could include an instance running Wowza Streaming Engine or other server software)

Pushing streams to these destinations allows organizations to scale their Wowza Streaming Engine implementation, computing resources, and delivery options for a variety of scenarios.

Though strategic partnerships with several third-party vendors like Facebook, we've created specific Stream Targets that allow for reliable and convenient connections. Wowza also offers the flexibility to reach additional destinations that aren't established Stream Targets.

Services-Based Scaling

Built on Wowza Streaming Engine, Wowza Video is a software-based service for media processing that can be deployed quickly for simplified global streaming. Designed with scalability in mind, it combines the power and flexibility of streaming software with the worldwide flexibility of the cloud.

Similar to software-based deployment, this service support scalability for both media processing and media delivery. However, because the service enables an end-to-end service from encode through distribution, many options for scaling achieve both simultaneously. These scaling techniques include UI- or API-based media processing, stacking, and origin stream sources.

1. Media Processing Using Dedicated Infrastructure

Our cloud service spans 15 regions across 3 public cloud providers to support one-to-one mapping between a single source and a stream target. This allows adaptive bitrate streams to be sent to CDNs or other destinations. The UI or API can be used to configure a transcoder; to configure one or more stream targets; or to configure both a transcoder and stream target.

When a content distributor using the service goes 'live,' the transcoder starts, connects to the source, and the output from the transcoder is sent to the selected destinations. A dedicated hardware transcoder is used for each live stream configuration, and users must manually configure the region beforehand.

The service selects 'warm' servers when started to save time and offers real-time monitoring and analytics into the status and health at the transcoder.

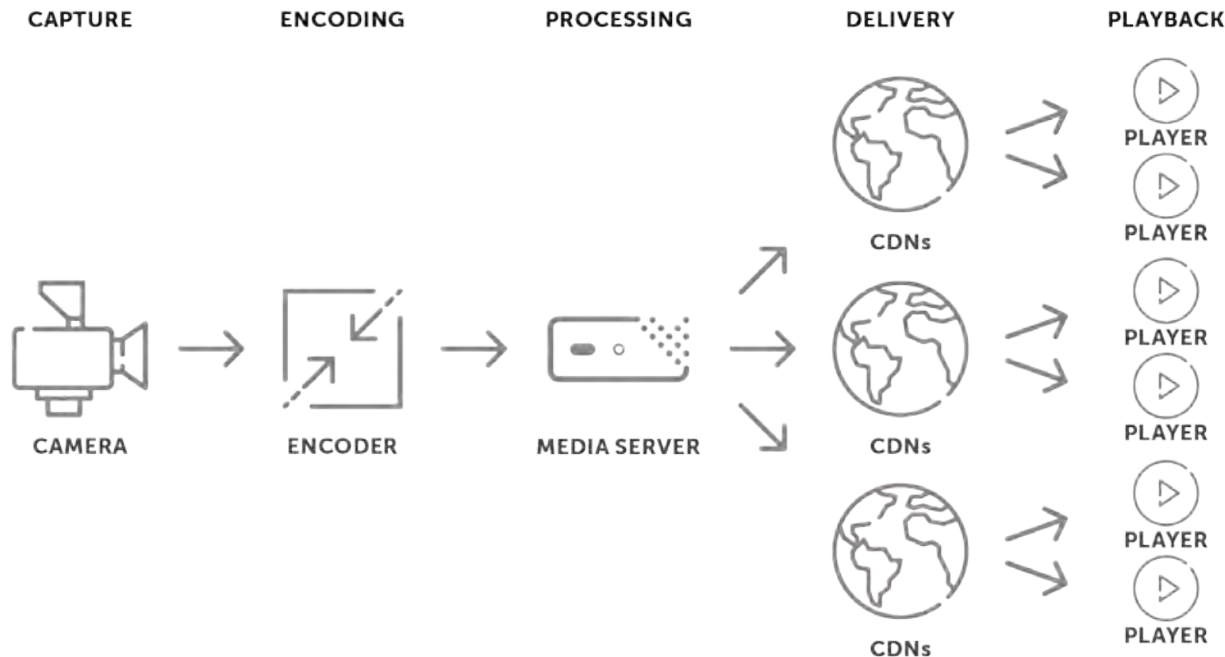


Figure 3: UI- or API-Based Media Processing

2. Stacking

While the cloud service defaults to one-to-one mapping between a single source and stream target, we're also able to pull multiple streams onto a single transcoder through a process of stacking. Ideal for content distributors that have multiple live stream configurations with identical settings and overlapping time windows, this allows for economies of scale by leveraging available computing resources.

3. Origin Stream Source

Stream sources simplifies setup by automating transcoder start and stop, improving start-up time, and detecting broadcast location.

Leveraging our transcoding network with location-based intelligence, Wowza stream sources uses a multi-tenant and scalable origin infrastructure that sits in front of the transcoder. This allows content distributors to leverage more 'warmed up' transcoders, reducing publish time. As a result, it provides an instant connection with the origin and the transcoder. The dynamic entry and automated process helps minimize publishing time — giving broadcasters near-instant feedback that their video is streaming.

In addition to increasing reliability for the first mile, stream sources reduces the likelihood of publisher abandonment with instantaneous publishing times — while providing health monitoring, control, and analytics to maintain a high level of availability.

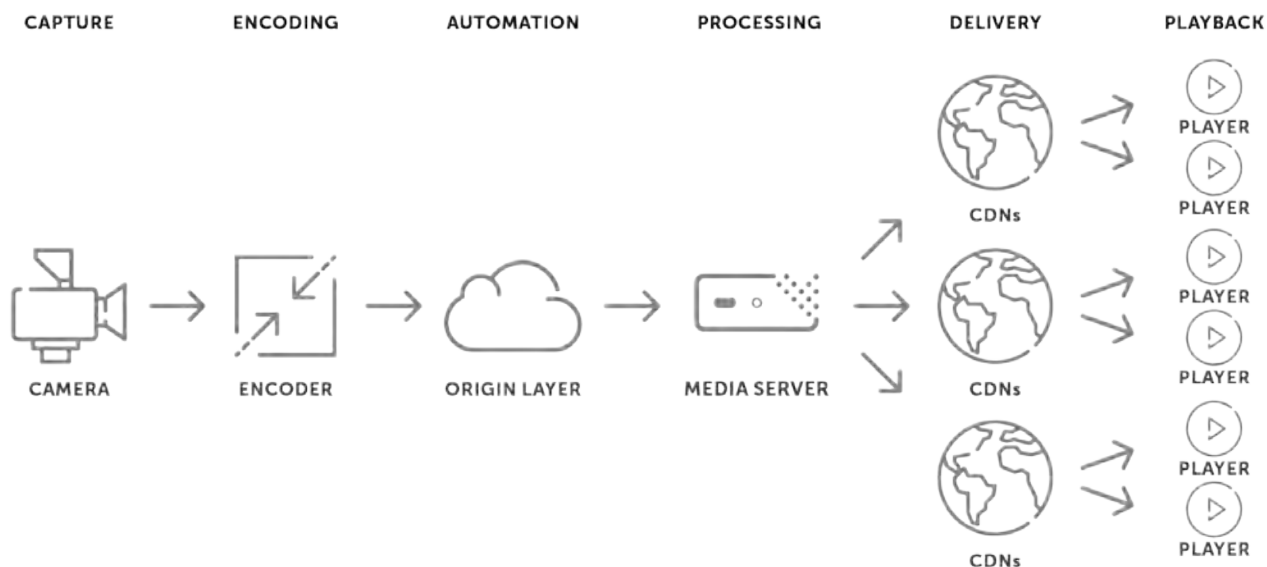


Figure 4: Origin Stream Source Workflow

Professional Services

Making live video work across platforms and at scale requires two things: reliable streaming infrastructure and a solutions-oriented partner. Our platform combines these to deliver tailored workflows and expert support.

We leverage more than a decade of video-streaming knowledge — encompassing everything from configuring servers to architecting unique streaming systems — to help organizations realize business success.

Whether it takes the form of a custom-built solution, architecture recommendations, or product integrations, Wowza Professional Services helps organizations engineer the best system possible for their ecosystem.

No matter the use case, Wowza is the go-to provider for tens of thousands of organizations that have incorporated live streaming into their business strategy. We help our customers bridge the gaps in their streaming workflow with a hybrid approach and willingness to meet their needs.

Enterprises Using Wowza at Scale

Wowza's video platform is already powering a number of enterprises under the hood. Find out how these organizations have achieved global scale with a custom streaming solution.



CDNs

A Global ISP

Profile

Through its extensive global network, this organization's content delivery network helps enterprises distribute digital and streaming video content around the world in a snap. The global IP provider leverages Wowza's software to support their enterprise customers with content delivery solutions.

Solution

This organization relies on Wowza's streaming server software for live linear streaming running on its origin network, that are then pushed to their proprietary edge network. This supports transcoding, packaging, network DVR and redundancy.

- Wowza's technology powers approximately 100 servers on this ISP's origin network.

Benefits

- Customizable: The organization chose Wowza to deliver a customizable software that could support their unique architecture.
- Solutions-Oriented: Wowza delivered a custom solution, timely software updates, and premium support to ensure their success.
- Flexible: The Java API allows flexible management and configuration.

A Korea-Based IT Infrastructure and CDN Provider

Profile

As one of the largest CDNs in Korea, this organization provides a variety of CDN services and a caching platform for rich media focused on e-learning and broadcasting.

Solution

The CDN relies on Wowza's streaming software for real-time transcoding and packaging of live stream in up to 4K.

- GSN runs up to 500 Wowza instances in an origin configuration

Benefits

- Scalable: Live transcoding allows this CDN provider to reach viewers on any device.
- Flexible: The Java and REST APIs allows flexible management and configuration.

Streaming Providers

A Live Streaming Platform

Profile

This platform enables organizations of all sizes to deliver high-quality, secure live streaming with options for monetization, media processing, interactivity and marketing, video sharing, and dedicated support.

Solution

The platform relies on Wowza's streaming software for real-time transcoding and packaging of live stream in up to 4K. The software is deployed on-premises via colocation and in the public cloud.

- The platform runs 400+ server software instances in an origin configuration

Benefits

- Scalable: Live transcoding allows this organization to reach viewers on any device.
- Flexible: The Java and REST APIs allows flexible management and configuration.

An Embeddable HTML5 Video Player

This popular video platform provides customers with the ability to broadcast live events quickly and easily to their audiences on any device with tools seamlessly integrated into the software provider's tech stack.

Solution

The organization combines Wowza's cloud service for live transcoding and packaging (with up to 1080p resolution). Additionally, the software provider relies on our CDN for global delivery.

Benefits

- Scalable: Real-time media processing allows this provider to reach viewers on any device, with the convenience of 'publish once, deliver to many'.
- Flexible: The REST API allows flexible management and configuration.
- High Availability: SLAs are enforced with outage and degradation clauses.

Retail

A Luxury Jewelry Brand

Profile

This luxury brand relies on Wowza for broadcasting live 24/7 content to customers across the globe. The omnichannel retailer combines traditional broadcast with live video streaming to scale content delivery across a range of devices.

Solution

The brand combines Wowza's software and services for live transcoding and packaging (with up to 4K resolution). Additionally, the retailer relies on our CDN for global delivery.

Benefits

- Scalable: Real-time media processing allows this organization to reach viewers on any device.
- Flexible: The REST API allows flexible management and configuration.
- Low Latency: The retailer achieves low-latency delivery at scale by working with Wowza.

A Consumer-to-Consumer Selling App

Similar to eBay, this Japanese e-commerce app built a digital marketplace where users buy and sell products. Users can buy and sell items via mobile-to-mobile live streaming.

Solution

Wowza customized this organization's solution by combining cloud services for real-time transcoding with stacking and origin stream sources to improve scalability. Finally, our CDN supports global delivery.

- This supports approximately 700 simultaneous streams in 720p to be delivered across a 12 hour period in the Japan region.

Benefits

- Automation: Optimizes real-time publishing from each source into our cloud service.
- Scalable: Achieves live media processing targeting mobile devices with high availability.
- Flexible: The REST API allows flexible management and configuration.

Wowza Puts the Stream in Mainstream



35,000+

LIVE-STREAMING IMPLEMENTATIONS



170+

COUNTRIES



23+ MILLION

TRANSCODING HOURS PER MONTH



SONY

SPACEX

Periscope



GRANICUS



RUPTLY



POPSUGAR

MACYS

UNIVERSITY OF OREGON

PARA-MEDIA HD

vivendi

swisscom

TURNER

GOBOSAT

GS Neotek

CHURCHSTREAMING

AXON



facebook

NBC UNIVERSAL



PLUTO

SOUTHEASTERN UNIVERSITY

Kaltura

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QUMU