

# WHAT IS **TRANSCODING** AND HOW DOES IT IMPACT STREAMING QUALITY?

The demand for high-quality video streaming continues to grow, along with viewers' expectation to be able to access video when they want to, on any device, anywhere. This makes streaming live and on-demand video a high-stakes endeavor—delivering the smooth experience that viewers around the world expect while containing your costs can be daunting. You've probably heard that transcoding is an important part of streaming live video (and video on demand) successfully, but do you know why? In short, without transcoding, your prospective audience is severely limited.

## LET'S LOOK AT WHAT TRANSCODING IS AND HOW IT CAN MAKE OR BREAK YOUR STREAMING PROJECTS.

### WHAT DOES TRANSCODING MEAN?

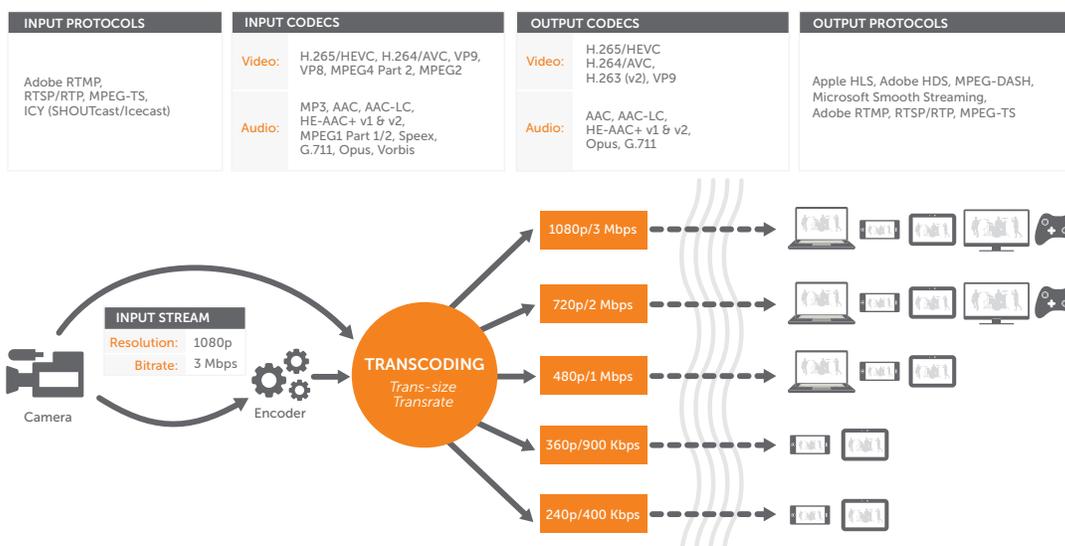
The word *transcoding* is commonly used as an umbrella term that covers a number of digital media tasks. When you say transcoding, you might be referring to any combination of the following tasks:

**TRANSCODING**, at a high level, is taking already-compressed (or encoded) content, decompressing (decoding) it, and then altering and recompressing it. Transcoding is critical in today's live streaming workflow because it enables you to change the video and/or audio format (codec) from one to another, such as converting from an H.264 video and AAC audio source to H.265 video or even VP9 video and Opus audio for MPEG-DASH playback.

Other tasks could include adding dynamic overlays to your video—watermarks, logos, news tickers, sports scores, or other graphics.

**TRANSRATING** refers specifically to changing the bitrate of the video or audio source, such as taking an HD video input stream at 5 Mbps and converting it into one or more lower-bitrate streams (such as 3 Mbps, 1.5 Mbps, 1 Mbps, 600 kbps, etc.) to enable adaptive bitrate (ABR) streaming. ABR streaming works by detecting a user's bandwidth and CPU capacity in real time and adjusting the quality of a video stream accordingly. The result is very little buffering, fast start time, and a good experience for both high- and low-bandwidth connections.

**TRANS-SIZING** refers specifically to resizing the video frame, say from a resolution of 1920x1080 (1080p) down to 1280x720 (720p) or 640x360 (360p). Trans-sizing is done in conjunction with transrating to create optimized renditions of the video stream.



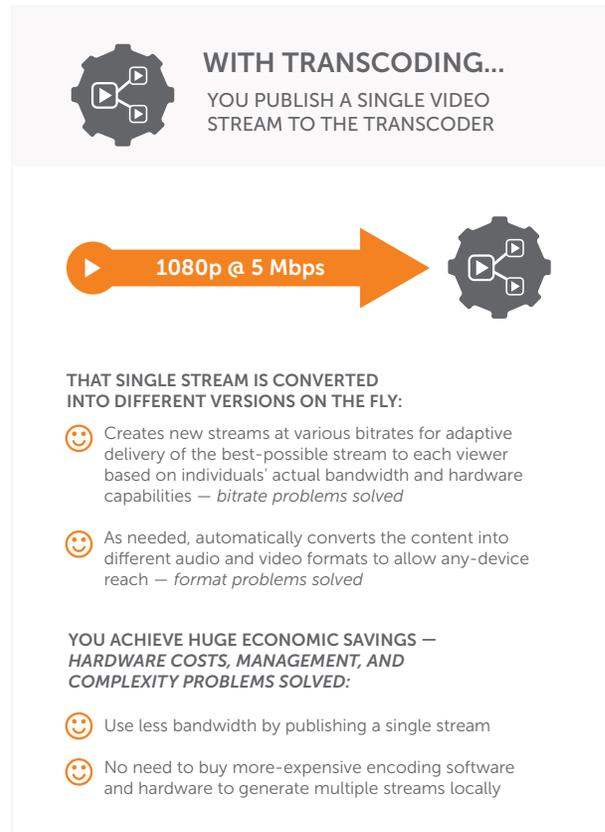
## WHEN IS TRANSCODING CRITICAL?

Simply put, when you want your content to reach more end users. Transcoding eliminates bitrate and format problems. With transcoding you publish a single (typically very high-quality) stream to the transcoder. That stream is converted into multiple versions on the fly, catering to viewers across diverse bandwidth qualities and delivering compatible formats to even legacy viewing devices.

You can also achieve significant economic savings by using less upstream bandwidth, publishing a single stream from the source instead of multiple ones at various bitrates. Additionally, you avoid buying expensive encoding software and hardware to generate multiple streams locally.

### LET'S CONSIDER AN EXAMPLE.

When doing a live broadcast you always want to reach the largest number of viewers with the best quality their bandwidth and device allow. To achieve this, your live streaming solution needs to support ABR streaming. Using a camera and encoder (or an IP camera), you stream one HD-quality H.264/AAC stream to your transcoder (typically located on a server image in the cloud) to create multiple H.264/AAC renditions at different bitrates and resolutions. Then you'd have your media server (which might be the same server as your transcoder) package those renditions into one or more ABR formats (HLS, HDS, etc.), allowing you to reach almost any screen on the planet.



## THREE THINGS TO LOOK FOR IN A TRANSCODING SOLUTION

Most streaming implementations need to support multi-bitrate H.264 video and AAC audio to reach the widest audience. Additionally, to reach audiences in emerging markets, such as India, support for H.263 video is necessary to reach legacy devices. While catering to both legacy and current standards, you want to keep pace with the latest technologies on the scene. With those factors in mind, consider these three aspects when choosing a transcoding solution:

### SCALABILITY

- Scaling up automatically to meet audience demand in a given area
- Scaling out geographically, and to both on-premises and cloud-based servers
- A licensing model that scales with your usage

### RELIABILITY

- Predictable performance
- 24/7 operation
- Redundancy for high-priority content
- Expert support when you need it

### FUTURE-PROOF TECHNOLOGY

- Support for 4K-resolution content with the latest codecs and formats, including VP9/WebM and H.265/HEVC for MPEG-DASH streaming
- Easy upgradability: software transcoders are ideal since updating/upgrading doesn't require hardware reinstallation or reconfiguration

### LIVE STREAMING CAN BE A HEADACHE.

Think of transcoding as a powerful pain reliever—taking away the pressure of live streaming so you can focus on other things.

## HOW THE WOWZA TRANSCODER SIMPLIFIES YOUR STREAMING WORKFLOW

Whether you use *Wowza Streaming Engine™* software or the *Wowza Streaming Cloud™* service, you send a single audio/video stream to the Wowza server/service. The Wowza technology provides adaptive streaming, automatically transrating the incoming stream to create streams of various bitrates and dynamically serving the appropriate one to each viewer based on his or her bandwidth—giving audiences from Silicon Valley to Mount Everest the best-possible viewing experience.

Wowza technology also changes that stream's format into others on the fly to match your viewers' device type for universal compatibility with set-top boxes, game consoles, smartphones, tablets, and desktop and laptop computers. And with *Wowza Transcoder* support for H.265 and VP9 encoding, customers now have the added benefit of being able to ingest H.264 or VP8 video and deliver their streams to the newest codecs over the MPEG-DASH protocol for even wider device support.

**75%** of today's viewers **will abandon a poor-quality video experience within four minutes.**<sup>1</sup>

Consumers are **62%** more likely to **have a negative impression** of a brand that publishes stuttering, buffering video.<sup>2</sup>

<sup>1</sup>Dan Rayburn, StreamingMediaBlog.com, March 26, 2015, <http://blog.streamingmedia.com/2015/03/convia-viewing-report.html>  
<sup>2</sup>Jeff Whatcott, Brightcove, November 26, 2013, <http://blog.streamingmedia.com/2015/03/convia-viewing-report.html>

### TRANSCODING WITH WOWZA STREAMING ENGINE SOFTWARE



- Customize your streams with a powerful server-side REST API.
- Modify the built-in transcoding profiles to suit your needs.
- Configure static and dynamic video overlays for closed captioning, breaking news, advertising, and more.
- Push as many streams as you want to Wowza Streaming Engine, and transcode them all for no extra cost.

### TRANSCODING WITH THE WOWZA STREAMING CLOUD SERVICE



- Save on outbound bandwidth—output a single high-resolution stream and let Wowza Streaming Cloud create various adaptive renditions.
- Start transcoding in seconds with an easy wizard—no additional setup or configuration required.
- Utilize the full transcoding, distribution, and player-provisioning workflow of the Wowza Streaming Cloud service, or use only the transcoder.

### NEXT STEPS/ADDITIONAL RESOURCES

- ▶ **WATCH A RECORDING OF OUR WEBINAR**  
 Live Streaming: Why Transcoding Is So Critical to Quality:  
[info.wowza.com/wowza-transcoder-webinar-on-demand](http://info.wowza.com/wowza-transcoder-webinar-on-demand)



For additional information, please visit [wowza.com/streaming/live-transcoding](http://wowza.com/streaming/live-transcoding).