

Adaptive Bitrate Transcoding on Alveo Accelerator Cards

INTRODUCTION

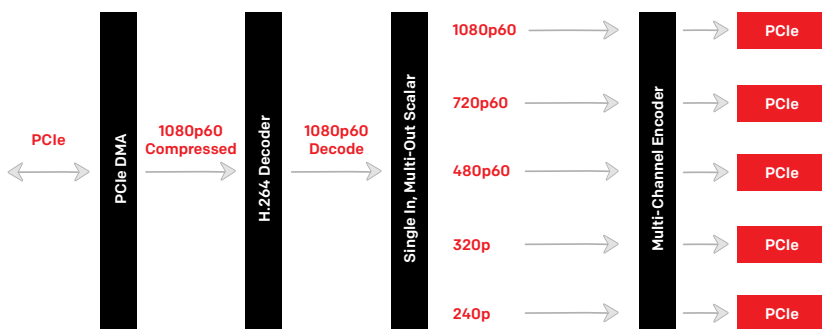
Video is the most dominant data type across both wired and wireless networks. With video finding its way into so many areas and applications, the uninterrupted flow of video is critical to many businesses. Video service providers are faced with the challenge of simultaneously managing infrastructure and improving customer Quality of Experience. These challenges have prompted the need for adaptable hardware acceleration.

Today video service providers manage bandwidth while guaranteeing effective video distribution by utilizing next-generation compression standards and Adaptive Bitrate (ABR) streaming protocols. Both of these approaches yield efficient results but increase computational complexity.

Xilinx saw this challenge coming and began working with NGCodec and VYUsync to build a solution that would supply the necessary performance without requiring customers to significantly alter their existing infrastructure. Together, we are delivering an Alveo accelerated real-time H.264 to HEVC or VP9 ABR transcoder.

PRODUCT OVERVIEW

- > Highest quality live encoding (equal to x265 slow preset)
- > Accelerated encoding with no host CPU requirements
- > 32 simultaneously independent encoded streams on a single Alveo U200 accelerator card
- > Simple API based on Ffmpeg industry standard



SOLUTION BRIEF



LEVERAGES NGCODEC AND VYUSYNC TECHNOLOGIES

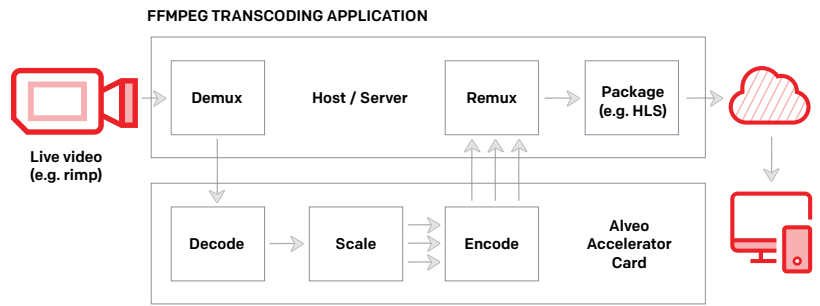
- > Quick Evaluation on Xilinx® Alveo™ Data Center Accelerator Cards
- > High-Performance HEVC & VP9 Encoders
- > Easy Programming with FFmpeg Integration
- > Fully Configured Transcoding Pipeline

SOLUTION OVERVIEW

Intelligent Partitioning

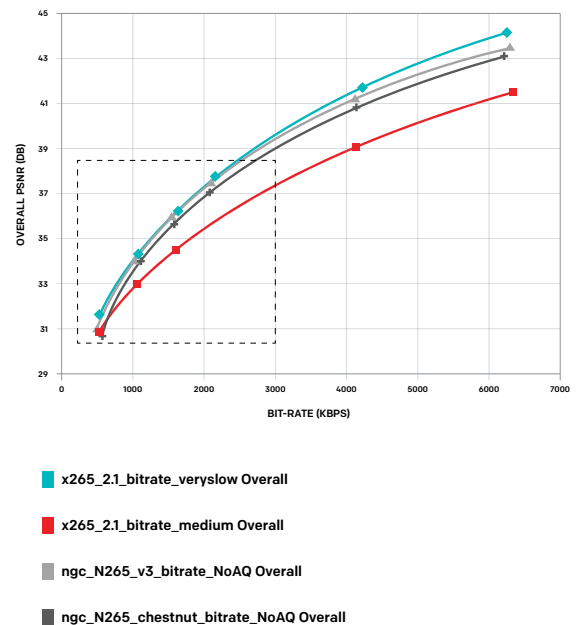
Xilinx, NGCodec, and VYUsync went to great lengths to provide the highest performance at the system level. Meticulous workload profiling ensured intelligent functional partitioning between the host CPU and the Alveo accelerator card.

FFmpeg plug-in support enables customers to integrate the Alveo U200 accelerator card and software into their solution with ease. The solution can be fully controlled through a standard command line window.



FEATURES

- > 1080p60 real-time encoding with better quality than x265 'slow' preset
- > 10X lower power consumption than CPU/GPU
- > Mainscreen and ABR outputs
- > Consistent output quality, independent of number of encoding channels
- > FFmpeg plugins for Decoder, Scaler, and Encoders
- > Built-in multi-pass encoding
- > Flexible multiple ABR outputs with up to 32 streams with a single instance
- > HEVC: Main 10 Profile up to Level 5.1 HD/SD 4:2:0 8 bit (UHD under development)
- > Constant bitrate (CBR), capped VBR, and ABR modes
- > Bitrates: Configurable from 100 Kb/s to 40 Mb/s
- > Latency: Configurable from 1 second to 4 seconds
- > Slice types: I, P, and B with flexible open/closed GOP modes and GOP lengths



DELIVERING AMAZING PERFORMANCE

Xilinx, NGCodec, and VYUsync have assembled a high-performance, easy-to-use video transcoding package that anyone with FFmpeg experience can use and evaluate.

TAKE THE NEXT STEP

For more information on the ABR Solution, visit Alveo [U200 ABR Video Transcoding Evaluation](#)

For complete information on the Xilinx Alveo portfolio, visit www.xilinx.com/alveo

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