

Real Time Video Server: High Channel-Density Solution

INTRODUCTION

For high-volume live streaming video service providers, OEMs, and Content Delivery Networks (CDNs) who need the highest density transcoding service at the lowest cost per channel, Xilinx RT Server delivers frictionless deployment and attractively low CAPEX.

The solution allows users to benefit from the hardware-accelerated capabilities of Xilinx Alveo accelerator cards through a standards-based FFMPEG SDK, or through Xilinx XMA, a C-based API which facilitates the integration of proprietary frameworks.

SOLUTION OVERVIEW

90% of worldwide Internet traffic is video, with an ever-increasing volume of live traffic making video transcoding workloads larger and more computationally intensive. Today, live streaming is ubiquitous across a wide variety of applications including video conferencing, eSports, Telemedicine, eCommerce, entertainment, Social Media and Distance Learning. Providers must deliver this increasing volume of live video streams while managing expanding capital expenditure costs.

The Xilinx high-density video RT Server appliance gives providers the platform to deploy the most channels in the smallest footprint, with the highest channel density and lowest cost per channel on the market. RT Server is delivered as a pre-assembled and configured appliance that providers can plug in and have running in no time.

The Video RT server appliance is pre-populated with Xilinx U30 accelerator cards and is targeted at video workloads using leading multimedia framework FFMpeg. The U30 SDK integrates key video transcoding plug-ins into FFMpeg, enabling simple hardware offloading of compute-intensive video workloads and provides a fully accelerated Adaptive Bitrate (ABR) video transcoding pipeline that includes decoders, ABR scalar(Single in, Multi-out), and encoders for H.264 and HEVC. The U30 SDK supports three main use cases: Straight transcoding; ABR transcoding; and Faster than Real Time transcoding.

Features and Benefits

- ▶ Highest channel density at lowest cost per channel
- ▶ 112 x 1080p30 transcodes in real-time on a single appliance populated with 7 x Alveo U30 accelerators
- ▶ Support for HEVC(H.265), H.264(AVC) & Adaptive Bit Rate(ABR) Scaling
- ▶ Supports video resolutions from 128x128 to 3840x2160
- ▶ Supports simultaneous decoding, scaling and encoding of up to 46 streams with max aggregated of 2X4Kp60 per card
- ▶ Faster than Real-Time feature enables a 60 minute 1080p60 quality video to be transcoded in 20 minutes on a single U30 accelerator
- ▶ Xilinx Resource Manager(XRM) enables multiple video processing jobs to run across multiple Alveo U30 cards for seamless workload scaling
- ▶ Seamless FFMpeg integration

Ready-To-Deploy RT Server Appliances

Boston Stream



[Learn More](#)

Hypertec

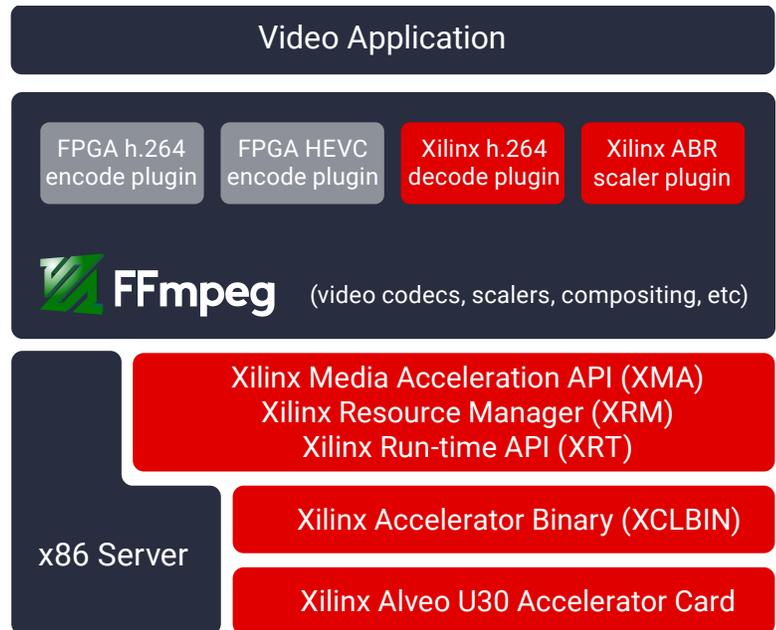


[Learn More](#)

SOLUTION DETAILS

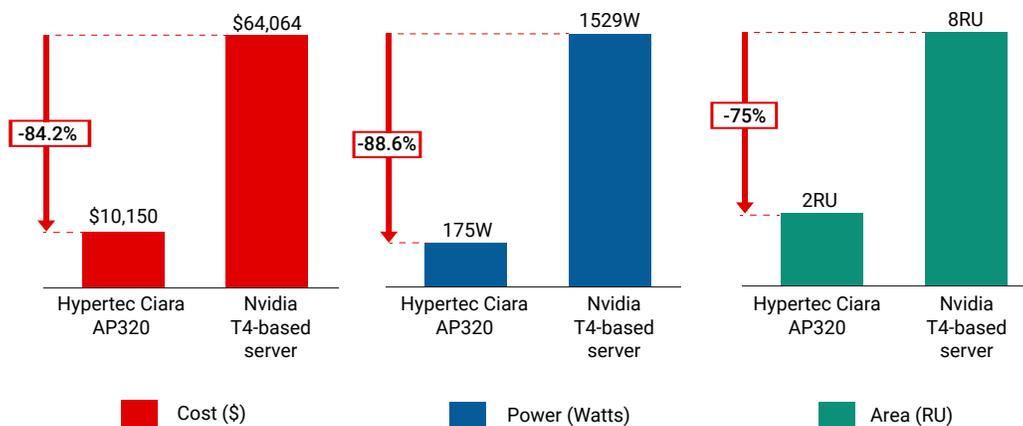
The U30 Video SDK is a complete software stack allowing users to seamlessly leverage the hardware accelerated features of Alveo U30 cards in the RT server appliance. It includes the following elements:

- ▶ A pre-compiled version of FFmpeg integrates key video transcoding plug-ins, enabling simple hardware offloading of compute-intensive workloads using the FFmpeg command line interface.
- ▶ The **Xilinx Media Accelerator (XMA)** library: a host interface meant to simplify the development of applications that manage and control video accelerators, such as decoders, scalers, filters, and encoders. It integrates the Alveo U30 transcoding capabilities into the FFmpeg framework.
- ▶ The **Xilinx Resource Manager (XRM)**, which manages and allocates all the hardware-accelerated features. XRM enables multiple video processing jobs to run across multiple Alveo U30 cards for seamless workload scaling
- ▶ The **Xilinx Runtime library (XRT)**, which manages communication between the application code and the accelerated-kernels deployed on the Xilinx Alveo accelerator card
- ▶ A suite of card management tools (XCLBIN) perform actions such as programming, resetting, or querying the status of U30 cards.



PERFORMANCE

The Ciara AP320 and Boston Stream R AMD EPYC based server powered by Xilinx U30 accelerators support 56 channels of 1080p60 and provide more than 80% in cost savings along with 1/10 the power and 1/4 the space versus a NVIDIA T4 powered server.



Notes: HEVC transcoding workload, cost and power for accelerators only

TAKE THE NEXT STEP > Visit www.xilinx.com



© Copyright 2021 Xilinx, Inc. Xilinx, the Xilinx logo, Alveo, Artix, Kintex, Spartan, Versal, Virtex, Vivado, Zynq, and other designated brands included herein are trademarks of Xilinx in the United States and other countries. All other trademarks are the property of their respective owners. Printed in the U.S.A. EW 022121

Adaptable. Intelligent.