AMD AND AUPERA DELIVER REAL-TIME VIDEO ANALYTICS

INTRODUCTION

Hundreds of millions of cameras are being deployed in the cities, retail stores, railway stations, manufacturing lines, but the ability to extract insights from this tremendous information has been more challenging than ever. Video processing functions, as basic as decoding and encoding, are very compute intensive, let alone video analytics. Use of generic CPUs, which perform all processing in software, has reached the bottleneck with the streaming increasing exponentially and growing number of cameras deployed.

To remove the CPU bottleneck in video processing, Aupera has innovated a whole new distributed micro-node architecture based on AMD Zynq™ UltraScale+™ MPSoCs, to build an ultra-high density computing platform for video transcoding & real-time analytics. Each single system is flexibly configured, and can contain up to 48 AMD Zynq UltraScale+ MPSoCs, which can handle 384 high definition 1080p concurrent video streams (H.264/265 compatible) transcoding simultaneously. In addition to its unique system architecture, the AUP2600 also features a complete video+AI software framework based on the AMD Vivado environment and Deep Learning Processor Unit (DPU) engine for neural network processing.

PRODUCT OVERVIEW

Aupera's Aup2600 series provides a modular and distributed computing architecture for video processing that breaks the bottleneck of traditional solutions based on x86 processors.

A single Aup2603 system supports up to 48 modules, with each module containing a AMD Zynq™ UltraScale+™ MPSoC processing engine and can be configured independently for different workloads. The system supports processing of up to 384 full HD video streams encoded in H.264/H.265 in total, offering 33x more capacity and occupying 10x less rack space, comparing to traditional solutions that consume the same amount of energy.

EASILY ADD ADAPTABLE REAL-TIME VIDEO ANALYTICS TO YOUR EXISTING IP CAMERA DEPLOYMENTS WITH THE AUPERA APPLIANCE

- Industry's Highest Density Video Transcoding and Machine Learning System
- Class-Leading 33X Video Transcoding Performance Improvement Over CPUs
- 75% Reduced Latency on Video Analytics
- AI Computing Solution From the Edge to the Cloud
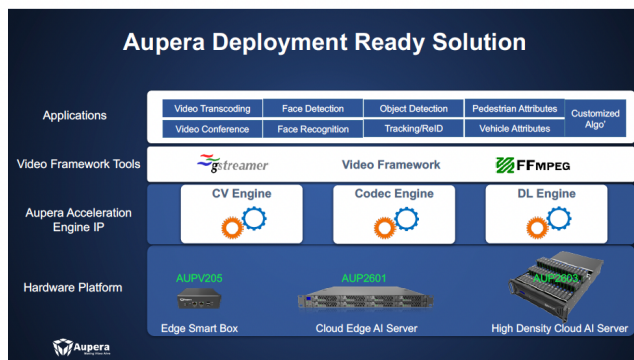
SOLUTION OVERVIEW

Video Processing

- **Transcoding Speed:** 3X of legacy x86 solution
- **High Density:** Up to 384 channels@1080P/3RU chassis
- **Energy Efficient:** 2W/stream@1080P
- **Codec:** H.264/H.265 compatible
- **VQ:** X264/265 ultra-fast/very fast/fast/medium
- **Function:** Video De/Encode/Transcode/Stream mixing
- B frame support
- JPEG decoding and encoding

Real-Time Video Analytics

- **Processing Capacity:** 384 channels@1080P30
- **Energy Efficient:** 3W/stream@1080P
- **Performance:**
  - Face detection: Up to 240FPS/Node (640x360), up to 11520FPS/system
  - Yolov3 object detection: Up to 64FPS/Node (416x416), up to 3072FPS/system
  - Pedestrian Attributes: Processing time < 5ms (96x128)
- **Supported Framework:** Caffe, Tensorflow, Darknet, Pytorch
- **Supported Neural Networks:** YoloV3, Densebox, Resnet, MobilenetV1-SSD, VGG16, InceptionV3/V4
- **Supported Models:** Face detection/recognition, Object detection, Video analytics, Pedestrian attributes, Pose Estimation, Segmentation, and more
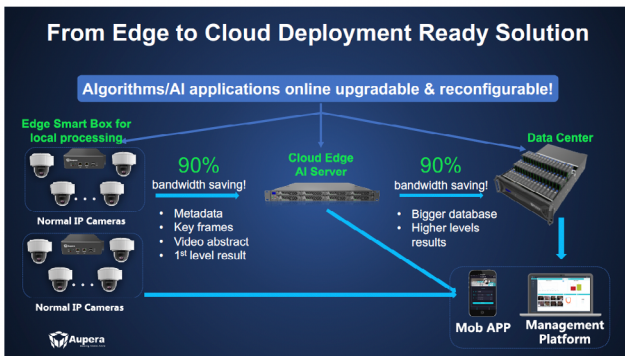
DELIVERING AMAZING PERFORMANCE

Aupera achieved significant improvements in all the most critical metrics with the Aup2600 series. Performance increased 33X compared to x86-based transcoding systems and the AupP2600 only requires 1/10th of the space and power of traditional server-based approaches. For live streaming customers, this translated into at least 50% cost saving on CAPEX per channel for video transcoding alone. With a single Aup2600 series running a unified video+AI capability, customers can not only eliminate the traditional servers dedicated to video transcoding, but also can achieve real-time AI inference reducing video AI processing latency to the maximum level, as well as adapting to a vast AIoT video AI application.

NEXT STEPS

- For complete information on the AMD Zynq portfolio, visit www.xilinx.com/products/silicon-devices/soc.html
- To learn more about Aupera's AUP2600 series, visit www.auperatech.com