

# Faster-Than-Real-Time Ad Insertion using ASICs

LOW LATENCY, HIGH DENSITY VIDEO ENCODING FOR AD INSERTION

# Introduction

Streaming video service providers are utilizing dynamic Ad insertion as an additional monetization strategy. To implement this strategy, service providers are typically utilizing dynamic Ad insertion for managing the placement of advertising in their content.

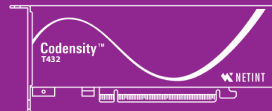
With the explosive growth of streaming content, service providers have embraced ASIC based hardware encoding as an alternative to CPU/software encoding due to its ability to efficiently scale while minimizing both TCO and reducing the encode time required for advertising content. Ad insertion services are under the same pressures to adapt to growing demand and must also look to new ASIC encoding solutions that enable faster-than-real-time performance to optimize profitability.



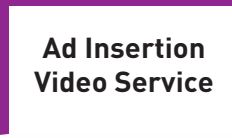
## Dynamic Ad Insertion Workflow



Streaming Content



Encoding



Just In Time Packaging



CDN

Faster-Than-Real-Time Ad Encoding with ASICs

**ASICs are 10x Faster**

CPU/Software Ad Encoding

Ad Insertion services require the flexibility enabled through faster-than-real-time video encoding to dynamically encode ads into the required format.

For faster-than-real-time performance at scale, Ad Insertion services are turning to ASIC based hardware encoding which also enables a 10x increase in encoding density with an 20x improvement in TCO and environmental footprint.

Next generation ASIC based hardware encoders, including the NETINT T408 and T432 are at the forefront of this transition, with their ultra high-density encoding capabilities, low power consumption and faster-than-real-time, low-latency, HEVC and H.264 codec support.

# T408/T432 Ad Encoding Benefits

## Ultra-High Density

Ten times increase in Ad Encoding density compared to software

## 4K/UHDTV/HDTV

Supports all common content and Ad formats enabling seamless encoding of Ad content matching source content.

## Faster-Than-Real-Time, Ultra-Low Latency

Optimized for faster-than-real-time Ad encoding applications.

## HEVC and H.264 Codec Support

Multi-format support for operational flexibility.

## Scalable

High capacity throughput for easy deployment of additional Ad insertion capacity.

## Reduced Environmental Footprint

20x decrease in carbon emissions compared to CPU/Software encoding.



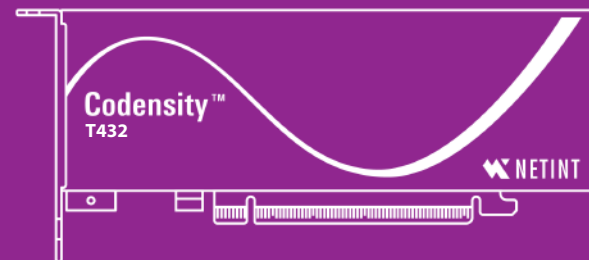
# T408/T432 High-Density Video Processing Units.

## High Density Video Transcoding for x86 and Arm Servers.

The NETINT T408 and T432 are faster-than-real-time, low-latency video transcoders for x86 and Arm-based servers. Available in U.2 and PCIe card form factors, the T408 and T432 enable hyper-scale video platforms to easily transition from software to hardware encoding and benefit from a 10x TCO reduction, 10x increase in encoding density and 20x carbon footprint reduction compared to CPU-based software video encoding.

The T408 and T432 are based on the NETINT Codensity G4 ASIC that supports H.264 and HEVC video encoding at up to 4K resolution with 10-bit HDR. The T408 and T432 video transcoders can be installed into any x86 or Arm enterprise-class server offering an easy upgrade path from software to hardware-based encoding.

The high throughput of the T408 and T432 enables ultra-low latency encoding of 40 broadcast quality 1080p60 streams in a 1RU server.



# T408/T432 Comparison

At the heart of NETINT T408 and T432 video transcoding solutions is the Codensity G4 Video Engine ASIC. Its architecture uniquely combines on-chip H.264 and HEVC video encoding and processing engines which deliver scalability for video-intensive live streaming applications.



	<b>T408</b>	<b>T432</b>
<b>Form</b>	U.2	PCIe
<b>Performance</b>	1x 4Kp60 4x 1080p60	4x 4Kp60 16x 1080p60
<b>Codecs</b>	HEVC, H.264 Encode/Decode	HEVC, H.264 Encode/Decode

For more information on **NETINT VPU solutions**, contact us at:

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