Intelligent silicon solutions for data-intensive applications.

Codensity T400 Video Transcoder

High Density Video Transcoding

Video content is the leading source of traffic on the Internet. Video is often generated and transmitted using the ubiquitous H.264 AVC video encoding standard. Meanwhile, H.265 HEVC video delivers equivalent quality with up to a 50% reduction in file size and bandwidth requirements, making it the codec of choice for newer video end points and devices. Transcoding between these top two video encoding standards is a common requirement for real-time streaming applications and services, however H.265 requires up to 10x the processing power of comparable H.264 video quality, limiting the scalability of software or even GPU-based video transcoding solutions. Codensity™ T400 Video Transcoders deliver scalable real-time video transcoding between H.264 AVC and H.265 HEVC formats up to 4K UHD video resolution.

FEATURES

Scalable H.264/H.265 Real-Time Transcoding

Leverages NVMe Server Technology
T400 modules designed to plug into NVMe U.2 bays

High Density
4K resolution @ 60 fps, or
8x 1080p @ 30 fps streams in a single U.2 module

FFmpeg-compatible SDK

BENEFITS

Improves Real-Time Transcoding Economics
Transcode and transrate live video content

Saves Equipment and Rack Space

80% Less Power compared to alternative software transcoding solutions
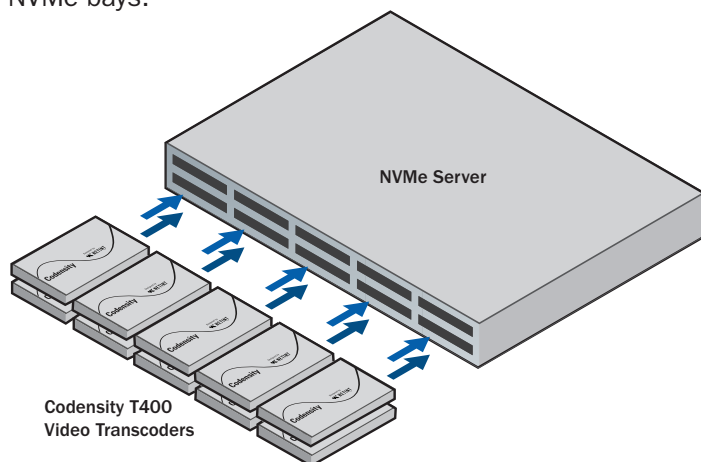
Simplified Integration

Designed for cloud transcoding architectures

High Density Real-time UHD Video Transcoding

Codensity T400 modules take full advantage of ASIC-based video processors inside the Codensity G4 SoC technology to support a staggering H.264/H.265 transcoding throughput of 60 fps of 4K UHD video, or 8x 1080p streams @ 30 fps per T400 module. At lower resolutions, even more simultaneous streams can be supported. By offloading complex encode/decode algorithm processing inside the ASIC, the T400 video transcoders minimize host CPU utilization. The result is a significant improvement in real-time transcoding density compared to any software or GPU-based transcoding solution.

## Integrates into Enterprise-Class NVMe Servers

The T400 video transcoding solution offers an elegant, simple, yet effective hardware architecture for transcoding scalability. SSD storage products are increasingly available based on PCIe 2.5" U.2 form factor. Similarly, NVMe was designed as a high performance, low latency, and extensible interface protocol for fast storage I/O. Enterprise-class server vendors have embraced these trends with an increasing variety of storage server products designed to host multiple U.2 NVMe bays. But rather than adding storage capacity, instead transcoding capacity can be added by plugging in Codensity T400 modules into the NVMe bays.

Software Integration with FFmpeg Library Support

Many video processing and transcoding applications developers are familiar with FFmpeg, an opensource software library with a vast suite of video processing functions. The Codensity solution includes a highly-efficient FFMPEG compatible SDK, requiring operators to simply apply a FFmpeg/libavcodec patch to complete the integration. The libavcodec patch on the host server functions between Codensity T400 NVMe interface and the FFmpeg software layer, allowing existing video transcoding applications already using FFmpeg to achieve quick and significant performance and capacity upgrades with Codensity T400 Transcoders.
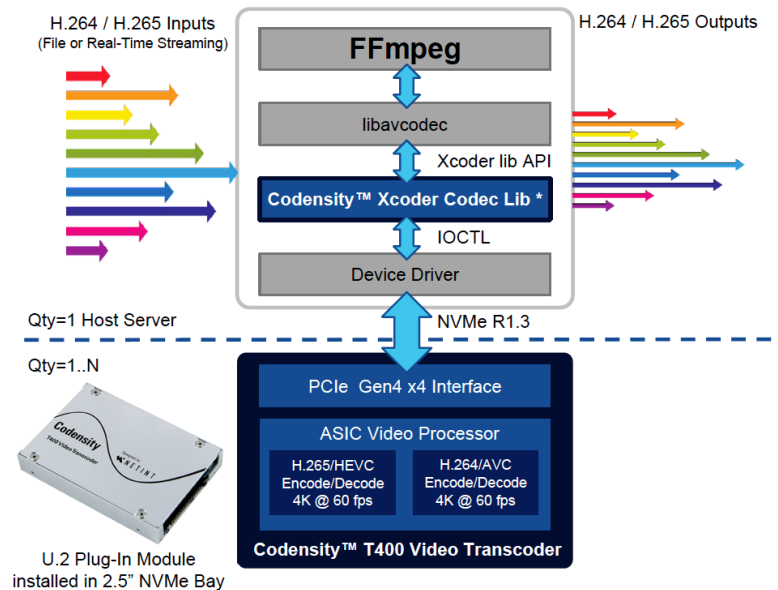
High Power Efficiency

Each Codensity T400 U.2 module consumes only 6W of power at full load. Plug 10x T400 U.2 modules into a 1RU server, and you have a highly efficient video transcoding cloud server.

A mid-range Intel® multi-core 1U server with 10x NVMe bays can host 10x T400 transcoder modules supporting 80x simultaneous 1080p @ 30 fps real-time transcoding sessions.

Codensity T400 Video Transcoder Technical Specifications

	T400-U.2
Form Factor	U.2 (SFF-8639) 2.5" Width / Height: 15mm
Interface	PCIe 4.0 x4
Protocol	NVMe R1.3
Power Consumption (Typical)	6W
Usage	24/7 Operation
Operation Temperature	0 degrees C to 70 degrees C
RoHS Compliance	Meets requirements of European Union (EU) ROHS Compliance Directives
Product Health Monitoring	Self-Monitoring, Analysis, and Reporting Technology (SMART) commands
	Temperature Monitoring and Logging

	H.264 AVC Decoder	H.265 HEVC Decoder
Profile	BP / CBP / MP / HP / HP10	Main / Main10
Level	L5.2	L5.1 Main-Tier
Max Resolution	8192 x 4096	8192 x 4096
Min Resolution	16 x 16	8 x 8
Bitrate	Up to 50 Mbps	
Capacity*	4K @ 60 fps 1080p @ 240 fps	4K @ 60 fps 1080p @ 240 fps

	H.264 AVC Encoder	H.265 HEVC Encoder
Profile	BP / CBP / MP / HP / HP10	Main / Main10 / Main Still Picture Profile
Level	L5.2	L5.1 Main-Tier
Max Resolution	8192 x 4096	8192 x 4096
Min Resolution	16 x 16	256 x 128
Quality	Equivalent or better than x264 with "faster" preset	Equivalent or better than x265 with "faster" preset
Capacity*	4K @ 60 fps 1080p @ 240 fps	4K @ 60 fps 1080p @ 240 fps

NETINT

ACCELERATING INTELLIGENCE

NETINT Technologies is a developer of intelligent silicon solutions for data-intensive applications. Its Codensity portfolio enables enterprise, cloud data centers and content providers to deploy high performance applications that they can scale without limit, while minimizing their data storage and processing costs. NETINT, founded by an experienced team of storage SoC veterans, is a Canadian venture-funded startup with R&D facilities in Vancouver and Toronto.

www.netint.ca | info@netint.ca

For more information, visit www.netint.ca