



VPU CATEGORY CREATOR

# Interactive Flip Book 2025

OVERVIEW

ALL VPU  
PRODUCTS

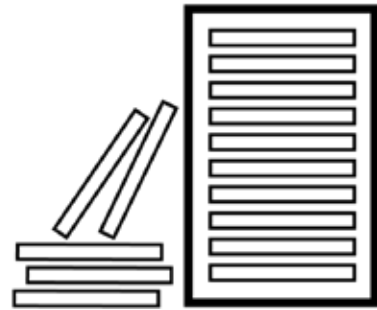
QUADRA  
SERVER

BITSTREAMS

GAMING

SECURITY

**Today's problem crippling  
live streaming platforms  
is the unsustainable rate  
of rising operational costs  
when scaling.**

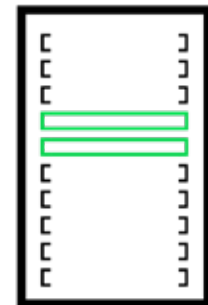
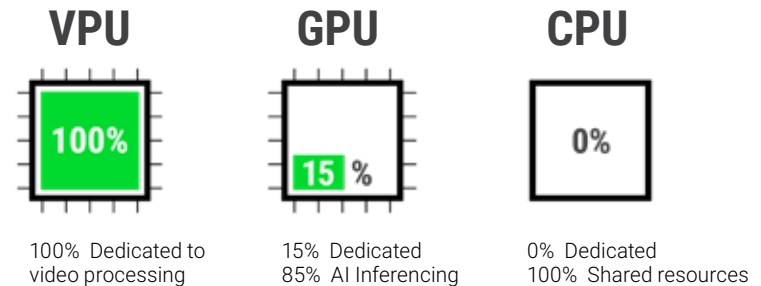


# Until now.

ASIC Video Processing Units are 100% engineered for only processing video.

Tasking VPUs with the single operation of video processing simplifies and accelerates the workflow by freeing up the CPU to do other video tasks, resulting in massive 10X more throughput at 1/10<sup>th</sup> the cost. In fact, incorporating VPUs in your video workflow will relieve 9 of 10 servers, enabling them to be re-purposed or decommissioned.

## 80% less hardware uses 80% less energy.



# Industry titans already pivoted into ASICs.

Both Google and Meta built proprietary video transcoding chips to reduce costs, shrink footprint and increase output.

**But ONLY for themselves.**



ASIC  
VPU

32 servers

GPU

250 servers

CPU

1,250

**SERVER DENSITY**

Servers required to deliver 10,000 concurrent HD streams



“There are two types of  
companies in the video business.

Those that are using  
video processing ASICs...  
and those that will.”

David Ronca, Meta  
*Video Encoding Expert, Formerly from Netflix*

# For everyone else, we built one for you.

## ASIC Smart VPU with AI 2nd Gen Codensity G5

The core of our Codensity technology is an in-house built ASIC. ASICs increase encoding density by expanding the number of encodable channels without increasing the rack footprint. This significantly reduces power and HVAC costs without sacrificing video quality or latency. These results cannot be achieved with CPU-based video processing.

Our VPUs are smart because they have on-chip AI. This enables greater acceleration of simultaneous video analysis functions supporting high-density streaming.

			
1st Gen ASIC	2018	2019	2021
2nd Gen ASIC	2021	2022	-
ASIC with AV1	2021	-	-
ASIC with AI	2021	-	-

Why yes, those are  
all industry firsts!



## Codensity G5 ASIC

- AI on-board @ 18 TOPS
- Encodes: 32x 1080p30 streams with AV1, HEVC & H.264
- Decodes 48x 1080p30 streams with VP9, HEVC & H.264
- Up to 8K 10-bit HDR

# VPU Category Creators

We created the VPU category to combat rising operational costs of streaming video. As the original innovators, we introduced VPUs to the world, before Google and Meta designed their internal versions.



**Joshua Zhu**  
CEO



**Tao Zhong**  
Founder



**2015**

Company founded to develop next-gen video processing

**160+**

Senior engineers from top-tier IC chip companies

**3 gens**

2 chip gens available.  
3rd-gen taping out in 2025

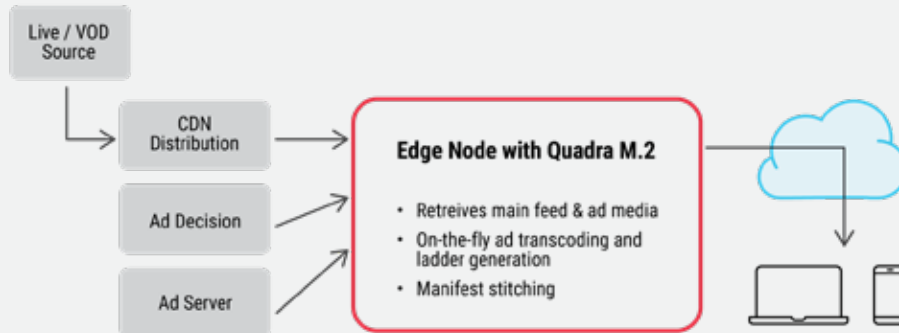


Vancouver, HQ R&D  
Toronto, R&D

# VPU Use Cases

While confidentiality agreements prevent us from naming names, our engineers are fully engaged with customers in these cutting-edge, cooperative innovations in broadcast, cloud, and surveillance.

## Edge Encoding



**Dynamic Ad Insertion**  
Customized for different regions with reduced latency.

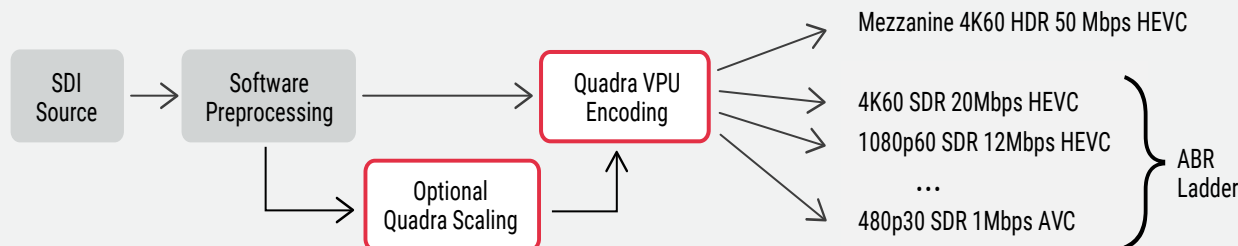
**Cloud Gaming**  
Rendering and encoding at the edge to reduce latency.

### Quadra delivered:

New form factor M.2 VPU resulting from cooperative development: T1M VPU. Delivers high quality and low latency encoding with P2P pull of YUV or RGBA.

## Live Contribution Encoding

SDI source capture generated a mezzanine stream and ABR ladder at the same time, reducing latency and increasing quality compared with cloud ABR ladder generation.



### Quadra delivered:

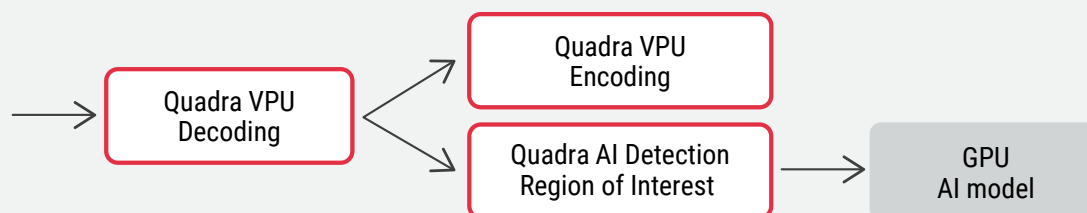
Affordable, high-quality, high-density encoding of mezzanine stream (4K60 10-bit HEVC) & generated ABR ladder with various codecs & bitrates.

# VPU Use Cases

Continued. Read more stories online at [netint.com/use-cases](https://netint.com/use-cases)

## AI Acceleration in Transcoding

Assist with AI detection to key regions of interest during transcoding.

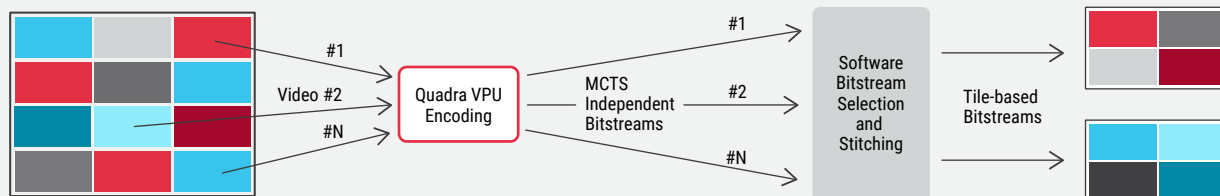


### Quadra delivered:

Region of interest coordinates are fed into GPU that runs more advanced AI models, effectively reducing GPU load.

## Multiview Encoding for Live Streaming

View multiple games simultaneously in user-defined quad split screen, ideal for fantasy sports watching and betting (YouTube and NBA do this now.)



### Quadra delivered:

Stitching 4 independent bitstreams into one tile-based bitstream encoding once per combination, NOT per stream (upwards of 210 combos of 4).



# VPU Product Specifications

OVERVIEW

**ALL VPU  
PRODUCTS**





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# Quadra Product Line

		Quadra Video Servers		Mini Server	Smart VPU T1U	Smart VPU T1A	Smart VPU T2A	OEM VPU T1M
Architecture		x86	ARM	x86				
CPU		AMD® EPYC	Ampere® Altra Max	Intel® 13th Gen i7				
Server Chassis		Supermicro® 1114S-WN10RT	Supermicro Mega DC ARS-110M-NR	Advantech® Vega 6321				
ASIC Hardware		10x T1Us		T1M	G5	G5	2x G5	G5
Size / Form Factor		1RU		1RU Half Rack	U.2	AIC	AIC	M.2
Power Consumption		~500W		~138W	17W	20W	40W	8-10W
Artificial Intelligence		150 TOPS		0	15 TOPS	15 TOPS	36 TOPS	0
Video Interface		0		SDI capture card Blackmagic® Decklink				
Software		Preloaded with NETINT Bitstreams™ <i>Live stream workflow automation and management tool</i>						
Performance	Encode	320x 1080p30 80x 4Kp30 20x 8Kp30		20x 1080p30 5x 4Kp30	32x 1080p30 8x 4Kp30 2x 8Kp30		64x 1080p30 16x 4Kp30 4x 8Kp30	20x 1080p30 5x 4Kp30
	Decode	480x 1080p30 120x 4Kp30 30x 8Kp30		25x 1080p30 6x 4Kp30	48x 1080p30 12x 4Kp30 4x 8Kp30		96x 1080p30 24x 4Kp30 8x 8Kp30	25x 1080p30 6x 4Kp30
Codecs	Encode	H.264, HEVC, AV1, JPEG, HEIF, AVIF						
	Decode	H.264, HEVC, VP9, JPEG						
Features		Capped bitrate CRF / scaling / cropping / padding / graphic overlay / color conversion						

# Quadra Video Server



<b>Architecture</b>	x86
<b>CPU Options</b>	AMD EPYC™ 7232P Server Processor (8-core)
	AMD EPYC 7543P Server Processor (32-core)
	AMD EPYC 7713P Server Processor (64-core)
<b>Operating System</b>	Ubuntu 20.04.05 LTS
<b>Memory</b>	16x 16GB DDR4-3200
<b>Storage</b>	400GB M.2 SSD
<b>NVMe Support</b>	10x
<b>PCIe Expansion</b>	Up to 3x PCIe slots
<b>Network Options</b>	Dual 10GBase-T LAN
<b>Power Consumption</b>	~500W
<b>Power Supply</b>	700W: 100 - 140Vac
	750W: 200 - 240Vac
	750W: 200 - 240Vdc (CCC only)
<b>ASIC transcoder</b>	10x Quadra T1U Smart VPUs
<b>Encoding capacity</b>	Up to 20x 8Kp30, 80 4Kp30 or 320x 1080p30
<b>Decoding capacity</b>	Up to 30x 8Kp30, 120 4Kp30 or 480x 1080p30
<b>Codec Support</b>	Encode: H.264, HEVC, AV1, JPEG, HEIF, AVIF
	Decode: H.264, HEVC, JPG, VP9
<b>Software Integration</b>	FFmpeg, GStreamer, NETINT SDK
	Preloaded with NETINT Bitstreams™
<b>Physical Dimensions</b>	W: 17.2" (437mm), H: 1.7" (43mm), D: 23.5" (597mm)
<b>Rack Size</b>	1RU
<b>Weight</b>	39 lbs (17.69 kg) fully loaded with 10x T1Us
<b>Environmental</b>	50° to 95° F operating temperature
	8% to 90% operating relative humidity
<b>Power Inputs</b>	100 - 140Vac / 8 - 6V / 50-60Hz
	200 - 240Vac / 4.5 - 3.8A / 50-60Hz
	200 - 240Vdc / 4.5 - 3.8A (CCC Only)
<b>Certifications</b>	RoHS Compliant, UL Approved

# Quadra Video Server

ARM



Architecture	ARM
CPU	Ampere Altra Max M96-28, 96-cores
Operating System	Ubuntu 22.04.3 LTS
Memory	256GB of DDR4-3200 RDIMM
Storage	400GB M.2 SSD
NVMe Support	10x
PCIe Expansion	Three PCIe 4.0 x16 LP slots One PCIe 4.0 x16 AIOM slot
Network Options	1 RJ45 Dedicated IPMI LAN port 2x 25Gb SFP28 Ethernet LAN Ports
Power Consumption	~500W
Power Supply	800W Redundant Platinum Level
ASIC transcoder	10x Quadra T1U Smart VPUs
Encoding capacity	Up to 320x 1080p30, 80x 4Kp30 or 20x 8Kp30
Decoding capacity	Up to 480x 1080p30, 120x 4Kp30 or 30x 8Kp30
Codec Support	Encode: H.264, HEVC, AV1, JPEG, HEIF, AVIF Decode: H.264, HEVC, JPG, VP9
Software Integration	FFmpeg, GStreamer, NETINT SDK Preloaded with NETINT Bitstreams™
Physical Dimensions	W: 17.2" (437mm), H: 1.7" (43mm), D: 23.5" (597mm)
Rack Size	1RU
Weight	39 lbs (17.69 kg) fully loaded with 10x T1Us
Environmental	50° to 95° F operating temperature 8% to 90% operating relative humidity
Power Inputs	750W: 100-127Vac / 50-60Hz 800W: 200-240Vac / 50-60Hz 800W: 230-240Vdc / 50-60Hz
Certifications	RoHS Compliant, UL Approved

# Quadra Mini Server

1RU Half rack



**Ideal for mobile broadcast** for on-site event recording and distribution of single stream with edge processing.

Push **multiple simultaneous streams** live to social sites.



Architecture	x86
CPU	Intel 13th Gen (i7-13800HE)
Server Chassis	Advantach Vega 6321H
Memory	16G Dual DDR5 SODIMM
Storage	2x M.2 Type E (PCIe Gen 3x1)
NVMe Support	M.2 256GB NVMe
Video Interface	SDI capture card / Blackmagic® Decklink
Display	2x HDMI 2.0
USB	2x USB 3.2 Gen 2
Ethernet Network	3x 2.5G RJ45
Power Consumption	138W
Power Supply	AC/DC 138W power adapter
ASIC transcoder	<b>1x Quadra T1M VPU</b>
Encoding capacity	Up to 20x 1080p30 or 5x 4Kp30
Decoding capacity	Up to 25x 1080p30 or 6x 4Kp30
Codec Support	Encode: H.264, HEVC, AV1, JPEG, HEIF, AVIF
	Decode: H.264, HEVC, JPG, VP9
Software Integration	FFmpeg, GStreamer, NETINT SDK
	Preloaded with NETINT Bitstreams™
Physical Dimensions	330mm x 160mm
Rack Size	1RU & Half Rack
Environmental	50° to 95°F operating temperature 8% to 90% operating relative humidity
Power Inputs	100 - 240Vac / 50-60Hz
Certifications	RoHS Compliant, UL Approved

## SDI capture card options:



### Blackmagic Decklink Duo 2

- Supports up to 4x 1080p60 or 1080i60
- Supports multiple outputs resolutions (1080p30, 720p30, 540p30, 360p)

### Blackmagic DeckLink 4K Extreme 12G

- Supports up to 2x 4Kp60
- Supports multiple output resolutions (1080p30, 720p30, 540p30, 360p)

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# Quadra T1M

OEM VPU



Form Factor	Custom PCI Express M.2-2260 (M key) compatible design
ASIC transcoder	G5
Dimensions	30 mm x 60 mm x 4.3mm (over PCB 2.1mm) With heatsink = 30mm X 60mm X 17.2mm
Weight	Without heatsink = 24g
Power	Standard M.2 Adapter Spec: < 10W Max Under Full Load Power supply input +3.3V with $\pm 5\%$ variation
Compliance	NVM Express 1.4 & PCI Express 3.0
PCIe Endpoint	4x Lanes, PCI Express Gen 3.0
Memory Configuration	64bit Single Channel, LPDDR4-3200, 4GB Memory
Operating Temperature	+0 to +35° C (300LFM active airflow with heatsink)
Absolute Max Ratings	+3.3V min = -0.5V, +3.3V max= 3.6V Ambient temperature: -55 to 95° C
Storage	Ambient temperature -40° C to +85° C Storage humidity 30% to 70% RH
Video Encoding Standards/Formats	AVC/H.264 Baseline, Main, High, High 10 HEVC/H.265 Main, Main 10 AV1 Main JPEG YUV 420 8 bit/10 bit encoding HDR10/10+, HLG, HRD, VBR, FIXP, CBR, CRF, ROI SEI/Meta data insertion, closed captions & look ahead
Video Decoding Standards/Formats	AVC/H.264 Baseline, Main, High, High 10 HEVC/H.265 Main, Main 10 VP9 Profile 0, Profile 2, JPEG YUV 420 8 bit/10 bit Decoding HDR10/10+, HLG SEI/Meta data extraction closed captions & error concealment
2D Processing Engines	Cropping, padding, scaling, overlay, YUV & RGB conversion
Software Integration	Windows, MacOS, Linux and Android OS Support libxcodec and Libavcodec FFmpeg / GStreamer integration
Performance / Throughput (Restricted to M.2 power Limit)	<b>Encode:</b> 20x 1080p30, 5x 4Kp30 <b>Decode:</b> 25x 1080p30, 6x 4Kp30 <b>Transcode:</b> 20x 1080p30, 4K-4K: 2x 30 FPS <b>ABR Ladder:</b> 10 Ladders @ 30 FPS, Input: 1080p, Outputs: 1080p, 720p, 352p (cif30), 352p (cif15)
Certifications	FCC, CE, EU, RoHS, REACH, HF, WEEE and UL
Usage	24/7 Operation

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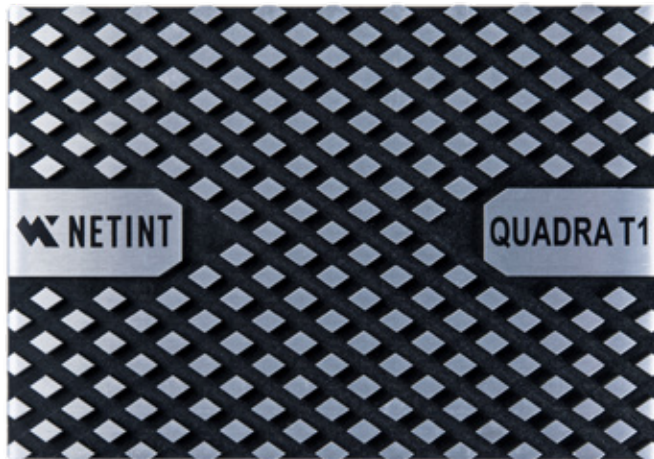
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# Quadra T1U

Smart VPU



<b>Form Factor</b>	U.2
<b>ASIC</b>	1x Codensity G5
<b>Interface</b>	PCIe 4.0 x4
<b>Power Consumption (Typ)</b>	10-17W <i>(Power mode dependent)</i>
<b>Usage</b>	24/7 Operation
<b>Operation Temperature</b>	0 - 50°C
<b>RoHS Compliance</b>	European Union (EU) ROHS Compliance Directives
<b>Product Health Monitoring</b>	Self-Monitoring, Analysis, and Reporting Technology (SMART) commands Temperature Monitoring and Logging
<b>Video Encoding Standards/Formats</b>	AVC/H.264 Baseline, Main, High, High 10 HEVC/H.264 Main, Main 10 JPG YUV 420 8 bit/10 bit encoding AV1 Main
<b>Video Decoding Standards/Formats</b>	AVC/H.264 Baseline, Main, High, High 10 HEVC/H.265 Main, Main 10 VP9 Profile 0, 2 JPEG YUV 420 8 bit/10 bit decoding
<b>Throughput Capacity</b>	Up to 32x 1080p30, 8x 4Kp30, 2x 8Kp30
<b>Level</b>	1 to 6.2 Main Tier
<b>Resolution</b>	32 x 32 to 8192 x 5120
<b>Scan Type</b>	Progressive
<b>Bitrate</b>	64kbit/s to 700Mbit/s
<b>Software Integration</b>	FFmpeg SDKs, GStreamer, LibXcoder API integration
<b>AI Deep Neural Network Engines</b>	15 TOPS AI Assisted Encoding
<b>Region of Interest (ROI)</b>	ROI enables the quality of some regions to be improved at the expense of other regions
<b>Closed Captioning</b>	EIA CEA-708 for H.264 and HEVC encode/decode
<b>High Dynamic Range (HDR)</b>	HDR10, HDR10+, HLG for H.264 & HEVC encode/decode
<b>Low Latency</b>	Sub-frame latency
<b>IDR Insert</b>	Forced IDR frame inserts at any location
<b>Flexible GOP Structure</b>	8 presets plus customizable GOP structure
<b>Video 2D Processing Engine</b>	Crop & Padding/Scaling/Overlay/YUV & RGB Conversion

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# Quadra T1A

Smart VPU



Form Factor	AIC (HH HL)
ASIC	1x Codensity G5
Interface	PCIe 4.0 x4
Power Consumption (Typ)	20W
Usage	24/7 Operation
Operation Temperature	0 - 50°C
RoHS Compliance	European Union (EU) ROHS Compliance Directives
Product Health Monitoring	Self-Monitoring, Analysis, and Reporting Technology (SMART) commands Temperature Monitoring and Logging
Video Encoding Standards/Formats	AVC/H.264 Baseline, Main, High, High 10 HEVC/H.264 Main, Main 10 JPG YUV 420 8 bit/10 bit encoding AV1 Main
Video Decoding Standards/Formats	AVC/H.264 Baseline, Main, High, High 10 HEVC/H.265 Main, Main 10 VP9 Profile 0, 2 JPEG YUV 420 8 bit/10 bit decoding
Throughput Capacity	Up to 32x 1080p30, 8x 4Kp30, 2x 8Kp30
Level	1 to 6.2 Main Tier
Resolution	32 x 32 to 8192 x 5120
Scan Type	Progressive
Bitrate	64kbit/s to 700Mbit/s
Software Integration	FFmpeg SDKs, GStreamer, LibXcoder API integration
AI Deep Neural Network Engines	18 TOPS AI Assisted Encoding
Region of Interest (ROI)	ROI enables the quality of some regions to be improved at the expense of other regions
Closed Captioning	EIA CEA-708 for H.264 and HEVC encode/decode
High Dynamic Range (HDR)	HDR10, HDR10+, HLG for H.264 & HEVC encode/decode
Low Latency	Sub-frame latency
IDR Insert	Forced IDR frame inserts at any location
Flexible GOP Structure	8 presets plus customizable GOP structure
Video 2D Processing Engine	Crop & Padding/Scaling/Overlay/YUV & RGB Conversion

# Quadra T2A

Smart VPU



<b>Form Factor</b>	AIC (HH HL)
<b>ASIC</b>	2x Codensity G5
<b>Interface</b>	PCIe 4.0 x4x4
<b>Power Consumption (Typ)</b>	40W
<b>Usage</b>	24/7 Operation
<b>Operation Temperature</b>	0 - 50°C
<b>RoHS Compliance</b>	European Union (EU) ROHS Compliance Directives
<b>Product Health Monitoring</b>	Self-Monitoring, Analysis, and Reporting Technology (SMART) commands Temperature Monitoring and Logging
<b>Video Encoding Standards/Formats</b>	AVC/H.264 Baseline, Main, High, High 10 HEVC/H.264 Main, Main 10 JPG YUV 420 8 bit/10 bit encoding AV1 Main
<b>Video Decoding Standards/Formats</b>	AVC/H.264 Baseline, Main, High, High 10 HEVC/H.265 Main, Main 10 VP9 Profile 0, 2 JPEG YUV 420 8 bit/10 bit decoding
<b>Throughput Capacity</b>	Up to 64x 1080p30, 16x 4Kp30, 4x 8Kp30
<b>Level</b>	1 to 6.2 Main Tier
<b>Resolution</b>	32 x 32 to 8192 x 5120
<b>Scan Type</b>	Progressive
<b>Bitrate</b>	64kbit/s to 700Mbit/s
<b>Software Integration</b>	FFmpeg SDKs, GStreamer, LibXcoder API integration
<b>AI Deep Neural Network Engines</b>	36 TOPS AI Assisted Encoding
<b>Region of Interest (ROI)</b>	ROI enables the quality of some regions to be improved at the expense of other regions
<b>Closed Captioning</b>	EIA CEA-708 for H.264 and HEVC encode/decode
<b>High Dynamic Range (HDR)</b>	HDR10, HDR10+, HLG for H.264 & HEVC encode/decode
<b>Low Latency</b>	Sub-frame latency
<b>IDR Insert</b>	Forced IDR frame inserts at any location
<b>Flexible GOP Structure</b>	8 presets plus customizable GOP structure
<b>Video 2D Processing Engine</b>	Crop & Padding/Scaling/Overlay/YUV & RGB Conversion

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# Quadra Video Servers

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# Quadra Video Servers

320 Streams. 500 Watts. Game Over.



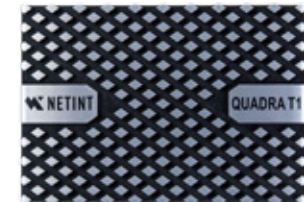
Built with award-winning Smart VPUs, NETINT video servers deliver 10x more throughput at one-tenth the cost of CPU or GPU-based systems. VPUs handle heavy video lifting, freeing CPUs for everything else—crushing the competition in density, efficiency and TCO.

- **Maximum stream density—coming and going**  
One compact 1RU server handles up to 480 simultaneous 1080p30 decodes and 320 encodes with ultra-low latency.
- **Ultra-low TCO, easy on your bottom line**  
Cut OPEX and CAPEX by up to 80% compared to CPU-based solutions. VPU's efficiency enables smaller footprint which consumes less power.
- **Simple stream management, no dev team required**  
Preloaded with NETINT Bitstreams™ management tool to simplify live stream workflows and automate technical FFmpeg/GStreamer tasks.

# Quadra Video Server



## Quadra T1U Smart VPU



Architecture		x86	ARM	
CPU		AMD® EPYC	Ampere® Altra Max	
Server Chassis		Supermicro® 1114S-WN10RT	Supermicro Mega DC ARS-110M-NR	
Size / Form Factor		1RU	1RU	U.2
ASIC VPU		10x T1U	10x T1U	Codensity G5 ASIC
Artificial Intelligence		150 TOPS	150 TOPS	15 TOPS
Software		Preloaded with NETINT Bitstreams™		-
Power Consumption		~500W	~500W	17W
Performance	Encode	320x 1080p30, 80x 4Kp30, 20x 8Kp30		20x 1080p30, 5x 4Kp30
	Decode	480x 1080p30, 120x 4Kp30, 30x 8Kp30		25x 1080p30, 6x 4Kp30
Codecs	Encode	H.264, HEVC, AV1, JPEG, HEIF, AVIF		H.264, HEVC, AV1, JPEG, HEIF, AVIF
	Decode	H.264, HEVC, VP9, JPEG		H.264, HEVC, VP9, JPEG
Features		Capped bitrate CRF / scaling / cropping / padding / overlay / color conversion		

# Quadra Mini Server Half rack



# Quadra T1M VPU



<b>Architecture</b>		<b>x86</b>	
<b>CPU</b>		Intel® 13th Gen i7	
<b>Server Chassis</b>		Advantech® Vega 6321	
<b>Size / Form Factor</b>		1RU Half Rack	M.2
<b>ASIC VPU</b>		1x T1M	Codensity G5
<b>Video Interface</b>		SDI capture card / Blackmagic® Decklink	-
<b>Software</b>		Preloaded with NETINT Bitstreams™	-
<b>Power Consumption</b>		~138W	8-10W
<b>Performance</b>	<b>Encode</b>	20x 1080p30, 5x 4Kp30	20x 1080p30, 5x 4Kp30
	<b>Decode</b>	25x 1080p30, 6x 4Kp30	25x 1080p30, 6x 4Kp30
<b>Codecs</b>	<b>Encode</b>	H.264, HEVC, AV1, JPEG, HEIF, AVIF	H.264, HEVC, AV1, JPEG, HEIF, AVIF
	<b>Decode</b>	H.264, HEVC, VP9, JPEG	H.264, HEVC, VP9, JPEG
<b>Features</b>		Capped bitrate CRF / scaling / cropping / padding / overlay / color conversion	

# Quadra Mini Server

1RU Half rack



**Ideal for mobile broadcast** for onsite event recording and distribution of single stream with edge processing.

Push **multiple simultaneous streams** live to social sites.



Architecture	x86
CPU	Intel 13th Gen (i7-13800HE)
Server Chassis	Advantach Vega 6321H
Memory	16G Dual DDR5 SODIMM
Storage	2x M.2 Type E (PCIe Gen 3x1)
NVMe Support	M.2 256GB NVMe
Video Interface	SDI capture card / Blackmagic® Decklink
Display	2x HDMI 2.0
USB	2x USB 3.2 Gen 2
Ethernet Network	3x 2.5G RJ45
Power Consumption	138W
Power Supply	AC/DC 138W power adapter
ASIC transcoder	<b>1x Quadra T1M VPU</b>
Encoding capacity	Up to 20x 1080p30 or 5x 4Kp30
Decoding capacity	Up to 25x 1080p30 or 6x 4Kp30
Codec Support	Encode: H.264, HEVC, AV1, JPEG, HEIF, AVIF
	Decode: H.264, HEVC, JPG, VP9
Software Integration	FFmpeg, GStreamer, NETINT SDK
	Preloaded with NETINT Bitstreams™
Physical Dimensions	330mm x 160mm
Rack Size	1RU & Half Rack
Environmental	50 degrees F to 95 degrees F operating temp, 8% to 90% operating relative humidity
Power Inputs	100 - 240Vac / 50-60Hz
Certifications	RoHS Compliant, UL Approved

## SDI capture card options:



### Blackmagic Decklink Duo 2

- Supports up to 4x 1080p60 or 1080i60
- Supports multiple outputs resolutions (1080p30, 720p30, 540p30, 360p)

### Blackmagic DeckLink 4K Extreme 12G

- Supports up to 2x 4Kp60
- Supports multiple output resolutions (1080p30, 720p30, 540p30, 360p)

# Artificial Intelligence Specs

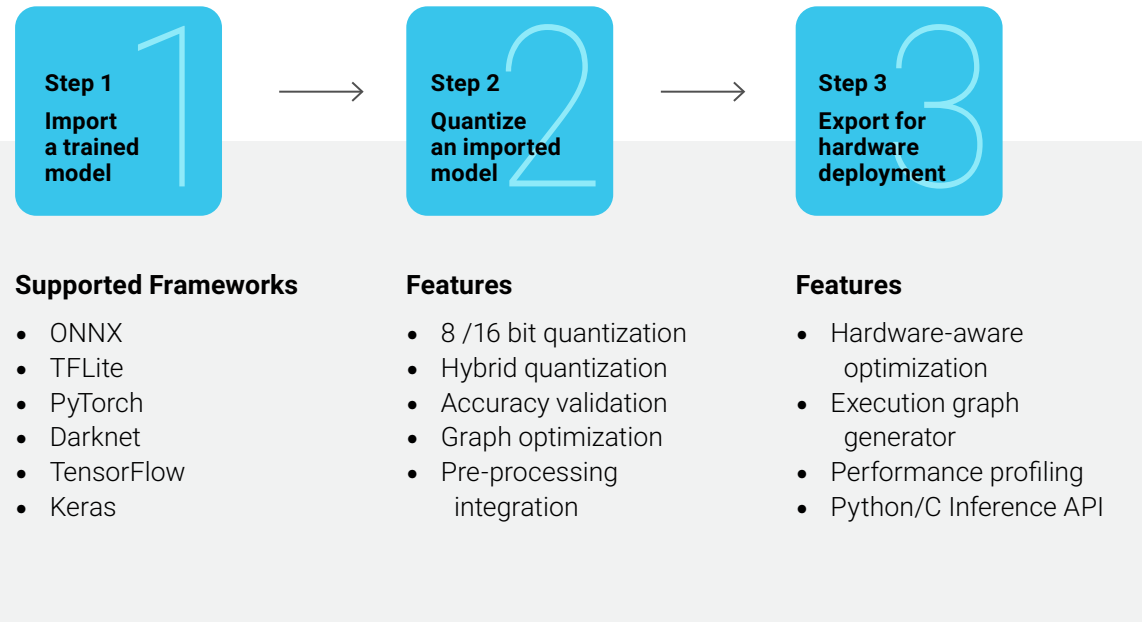
## Deployment Workflow for Pre-trained AI models

AI deep learning models are imported to Quadra VPUs with the NETINT AI Toolkit then processed (Import, quantization, validation & optimization), exported, and executed on Quadra Neural Processing Units (NPUs).

### Specifications

- Test hardware: T1A, test firmware version: 3.1
- AI capability per G5 ASIC: 18 TOPS
- Datatype for evaluation: INT8, batch size: 1
- Performance based on original model without pruning, sparsity or modification
- Quadra supports multiple AI modes (Full, Eco, Off) depending on power/performance requirement

Specification	Input Size	Performance FPS @ 1 GHz
Yolov5s	640x640	78
Yolov5s	320x320	231
Yolov4-tiny	416x416	276
ResNet 50	224x224	228
MobileNetv2	224x224	1234
FSRCNNx3	360x640	36
DeepLabv3	257x257	452
BiSeNetV1	512x512	51
HrNet	256x192	72



### AI Deep Neural Network Inference Engines

INT8 Trillion Operations Per Second (TOPS)

- T1U: 15 TOPS
- T1A: 18 TOPS
- T2A: 36 TOPS

### AI Deep Learning Frameworks used:

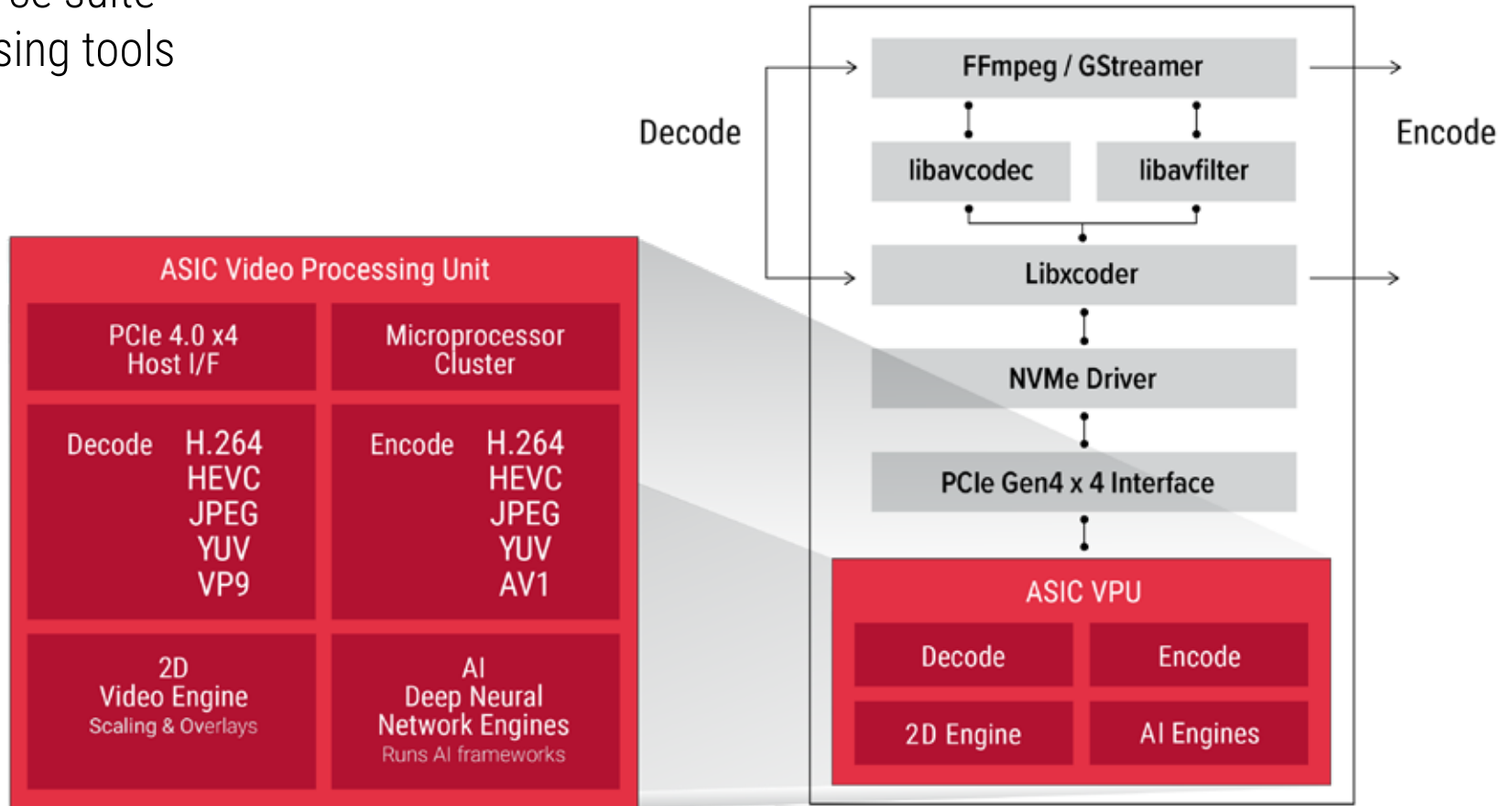
- Caffe
- Darknet
- Keras
- ONNX
- PyTorch
- TensorFlow
- TensorFlow Lite

### Applications for Quadra AI Inference Engine include:

- ROI encoding
- Scene detection
- Background removal
- Video enhancement
- Facial recognition
- Object detection

# Simple Integration

# Open-source suite of processing tools





# Bitstreams™

The control panel to simplify your streaming operation and maximize your VPU's performance

OVERVIEW

ALL VPU  
PRODUCTS

QUADRA  
SERVER

**BITSTREAMS**

GAMING

SECURITY



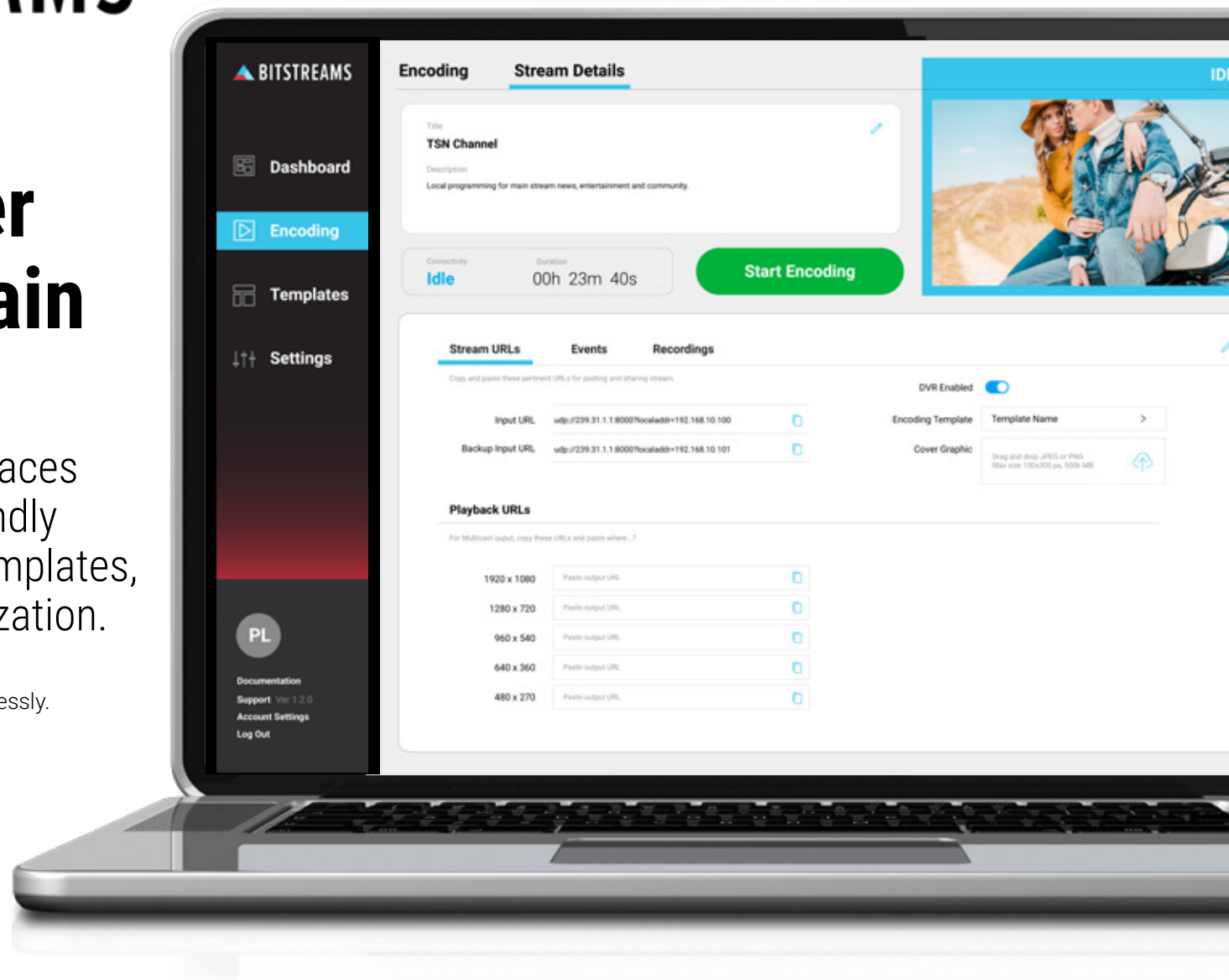


# FFmpeg power without the pain

NETINT's Bitstreams™ replaces command lines with a friendly dashboard, ready-made templates, and always-on VPU optimization.

Manage, monitor, and scale live streams effortlessly.

No code. No chaos.  
Just streaming simplified.



OVERVIEW

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GAMING

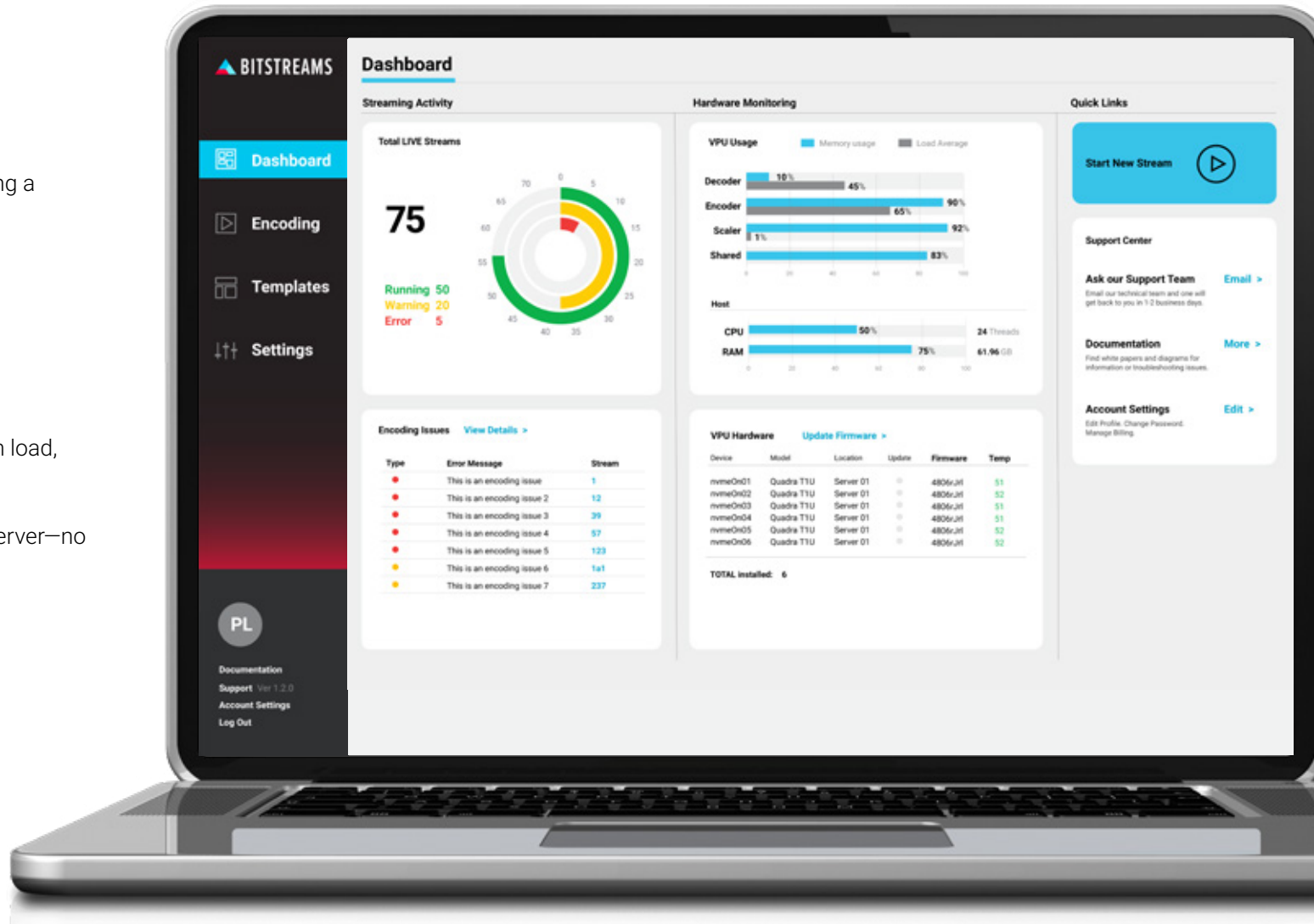
SECURITY



# Dashboard View

Command central for your streams

- **FFmpeg power. Zero code.**  
Tap into FFmpeg without ever writing a command line
- **Built for non-engineers**  
Streamlined interface designed for operators, not developers
- **Live stream launch in clicks**  
Prebuilt templates make setup fast, repeatable, and foolproof
- **VPU health at a glance**  
Real-time dashboard shows system load, errors, and stream status
- **Preloaded and ready to go**  
Comes installed on every Quadra server—no setup required



Dashboard
Encoding
Templates
Settings

### Encoding

From this page users can view the status of current encoding sessions, along with viewing the current configuration. Users are also able to stop, start streams and navigate to a more detail page by clicking on the stream name. To create a new stream, use the "+ Create New Stream" button on the right hand side of the screen.

Create New Stream

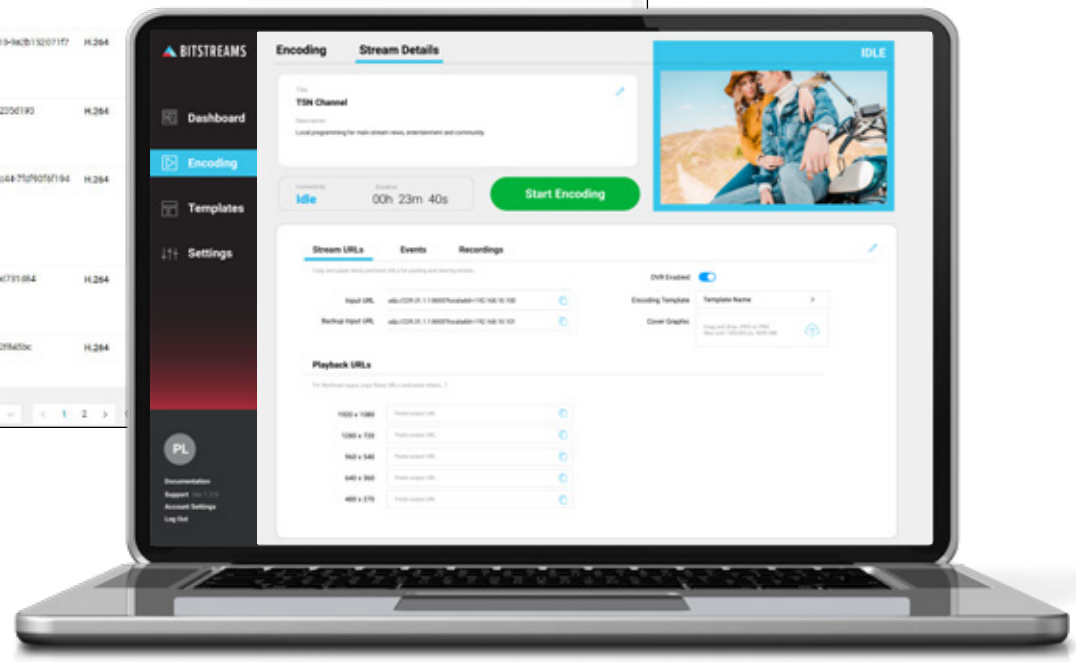
Status	Stream Information	Input URL	Template	Output URL(s)	Message
Stopped	<b>test stream</b> just a test	rtmp://CL/506/10380/streams..._a2-d5bc2b6b3d21,m-pubdash	H.264	http://CL/506/5/0b0b02..._d6-8b6c651055b5e144.m3u8 http://CL/506/5/0b0b02..._b6b4b6c6510555e144.mpd	
Stopped	<b>edfigadig</b> testing	rtmp://CL/506/1935/9ew/1...25-47a5-ae7f-063684a14a09	H.264	test	
Stopped	<b>anda</b>	rtmp://CL/506/1935/9ew/1...25-46a8-a84c-9f440b4d0d0	H.264	http://CL/506/5/0f4925..._a2-96ba-3d05c7129bc7.m3u8 http://CL/506/5/0f4925..._a2-96ba-3d05c7129bc7.mpd	
Active	<b>1</b>	udp://224.0.0.35:8000	H.264	http://CL/506/5/0f11555..._9d-bc36-5956c2154774.m3u8 http://CL/506/5/0f11555..._9d-bc36-5956c2154774.mpd	This is a encoding issue2
Discontinued	<b>12</b>	rtmp://CL/506/1935/9ew/1...89-4299-6ba0-9d02b4d2579	H.264	http://CL/506/5/0f270829-6bcf-4231-696a-3a78f80c1f.m3u8 http://CL/506/5/0f270829-6bcf-4231-696a-3a78f80c1f.mpd	This is a encoding issue3
Idle	<b>16</b>	rtmp://CL/506/1935/9ew/0f5d3c6a7475-402f-4613-ba2b132071f7	H.264		
Idle	<b>123</b>	rtmp://CL/506/1935/9ew/1...8d-4769-6a09-0f131220d192	H.264		
Idle	<b>1a1</b>	rtmp://CL/506/1935/9ew/0f270829-6bcf-4231-696a-3a78f80c1f	H.264		
Discontinued	<b>2x2</b>	rtmp://CL/506/1935/9ew/1...c3-483a-a779-3c7a3c731884	H.264		
Idle	<b>1234</b>	rtmp://CL/506/1935/9ew/0...cd-4e34-61af-4050129a20ac	H.264		

Total 15 10/page < 1 2 >

# Encoding

See it, set it, stream it

Preview and manage all live encoding sessions with a clear visual breakdown of each stream.



Dashboard
Encoding
**Templates**
Settings

### Templates

From this page users can view all the templates configured. By clicking on the row, a summary of the template will be displayed on the right. Users will then be able to modify the template by clicking the edit icon. To create a new template, use the "Create New Template" button on the right hand side of the screen.

Reset
Search

Name	Used	Created
template1	0	2024-09-25 16:15:19
asdad	0	2024-09-10 22:42:56
123	0	2024-08-21 23:55:22
123a12 Default	0	2024-08-01 00:28:37
1212311	0	2024-07-01 21:56:54
12342	0	2024-07-12 23:04:52
123a	0	2024-07-10 00:42:39
1237	0	2024-07-06 21:40:30
Taaaa	1	2024-07-08 16:18:44
adada	1	2024-07-06 01:44:57

Total 21
16/page
1 2 3 > Go to 1

#### Preview Configuration

##### Taaaa

Output Format

HLS Format: mpeg4
Segment Duration: 1 sec

Video Parameters

Output 1: H.264 4500kpbs 30fps 1920x1080

Output 2: H.264 4500kpbs 30fps 1920x1080

Output 3: H.264 4500kpbs 30fps 1920x1080

Output 4: H.264 4500kpbs 30fps 1920x1080

Output 5: H.264 4500kpbs 30fps 1920x1080

Output 6: H.264 4500kpbs 30fps 1920x1080

Output 7: H.264 4500kpbs 30fps 1920x1080

Output 8: H.264 4500kpbs 30fps 1920x1080

Output 9: H.264 4500kpbs 30fps 1920x1080

Output 10: H.264 4500kpbs 30fps 1920x1080

Audio Parameters

Output 1: COPY copy und 48K 128kpbs 6chs

Output 2: AAC copy und 48K 128kpbs 6chs

Output 3: COPY copy und 48K 128kpbs 6chs

Output 4: AC3 copy und 48K 128kpbs 6chs

Output 5: COPY copy und 48K 128kpbs 6chs

Output 6: COPY copy und 48K 128kpbs 6chs

# Templates

Set once. Stream often.

Use prebuilt or custom templates to standardize configurations and launch streams faster.

With 5 subtabs of detailed configurations, your streaming schedule is tailored to your needs.

Video Parameters	Audio Parameters	Advanced	Format	Graphics Overlay																				
<table> <thead> <tr> <th>Output#</th><th>Codec</th><th>Bitrate (kbps)</th><th>Frame Rate (FPS)</th><th>Resolution (width x height) (px)</th></tr> </thead> <tbody> <tr> <td>1</td><td>H.264</td><td>4500</td><td>30</td><td>1920 x 1080</td></tr> <tr> <td>2</td><td>H.264</td><td>4500</td><td>30</td><td>1280 x 720</td></tr> <tr> <td>3</td><td>H.264</td><td>4500</td><td>30</td><td>640 x 480</td></tr> </tbody> </table>	Output#	Codec	Bitrate (kbps)	Frame Rate (FPS)	Resolution (width x height) (px)	1	H.264	4500	30	1920 x 1080	2	H.264	4500	30	1280 x 720	3	H.264	4500	30	640 x 480				
Output#	Codec	Bitrate (kbps)	Frame Rate (FPS)	Resolution (width x height) (px)																				
1	H.264	4500	30	1920 x 1080																				
2	H.264	4500	30	1280 x 720																				
3	H.264	4500	30	640 x 480																				

Video Parameters

Audio Parameters

Advanced

Format

Graphics Overlay

Default Language

eng

[Supported Language Codes](#)

If audio stream is not specified, this language will be used as default.

Live Transcription

☒

Enabling Whisper AI Live Transcription requires CPU resources from the host, which will affect the overall capacity of the server.

Transcription Index

1



Select the input audio track for the Live Transcription.

Output	Input Index	Language	Default Language	Codec	Profile	Channel	Bitrate (kbps)	Sample Rate
1	0	copy	und	ac3		0	128	48k
2	1	copy	und	aac	aac_low	0	128	48k

Video Parameters Audio Parameters **Advanced** Format Graphics Overlay

Custom VPU encoder-params ☐

### Decoding Parameters

Deinterlace Parity  Recommended: auto

When deinterlacing the video stream, will the frame will be constructed with the top field first (odd rows) or bottom field first (even rows).

Deinterlace Mode

When deinterlacing the video stream how are the fields handled?

- Send Frame: each field is sent as a frame. This will result in doubling of the frame rate, which also requires more GPU resources.
- Send Frame: two fields are used to construct a single frame. This will result in matching the frame rate.

### Encoding Parameters

Look Ahead ☒

Improves encoding quality by 2-pass encode, the 1st pass (lookahead pass) encodes the frame at a macroblock level to improve 2nd pass encode compression efficiency (quality). Enabling this feature will decrease the encoding capacity and increase the delay. Recommended for resolutions greater than 1280x720.

Look Ahead Depth

Configures the number of frames used during lookahead. Higher the value will result in higher memory usage on the VPU device.

RDO Quantization ☒

Optimizes quantization to further improve video quality. Enabling this feature will decrease the encoding capacity.

RDO Level  Recommended: 1

Configures the RDO level, higher values result in quality increases but with decrease in encoding capacity. Supported values: H.264 is 1 and H.265/AV1 are 1 to 3.

# Settings

## Advanced power, simple control

Tweak encoding parameters, manage overlays, and customize your setup without touching code.

Video Parameters Audio Parameters **Advanced** **Format** Graphics Overlay

### Format

HLS Format  Recommended: MP4 for compatibility with DASH

Package the video and audio formats as its segments or as fragmented mp4. TS is only supported for H.264 codec.

Segments Stored

How many segments (in seconds) are to remain on the server before they are deleted.

Segment Duration

Determine the size of each segment (in seconds). This can also be used to force a duration between frames.


Upload and manage your graphic library for customizable overlay layouts.

Video Parameters Audio Parameters **Advanced** **Format** **Graphics Overlay**

### Graphic Overlay

Enable Overlay ☒

### Available Images



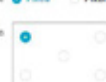
Total: 1 10/page 1 2 3

### Overlay Preview

Output Resolution: 1920 x 1080

Image Resolution: 256 x 144

Location Type: ☒ Fixed ☐ Pixel

Location: 

# About Bitstreams

Bitstreams was built for companies that want the power of FFmpeg without requiring a dev team. Designed for edge deployment, it gives teams a code-free way to manage live streams, optimize video workflows, and monitor VPU health—all through an intuitive interface.

## Ideal for:

- Streaming platforms without in-house software development
- Service providers, broadcasters, and linear TV operations
- Teams managing on-prem hardware with limited dev resources
- Organizations with compliance requirements and auto-recording needs
- Any business needing powerful tools without building from scratch

## Easy to Deploy

- Preloaded on all Quadra Video Servers
- Compatible with existing Quadra and Logan hardware
- Runs on Linux (x86 or ARM) via Docker containers
- Minimal setup—just a few command strings to launch
- Self-managed upgrades during your own maintenance window

## System Features:

- Simplified, code-free configuration of FFmpeg for non-technicals in wide stream distributions
- Dashboard provides visual quick-check for:
  - Streaming Error Alerts
  - System Health Check
  - CPU/VPU hardware capacity loads
- Generates report logs for stream status
- Preset templates for simplified management of live stream sessions, set once-use many
- Managed through web app or custom API
- Annual subscription model includes:
  - New feature releases, bug fixes, tech support, and failover redundancy

## Live Streaming:

- Supports lone-time events with several hour duration
- Input: SRT, RTMP
- Output: Dash/HLS

## Live Video Encoding:

- System runs 24/7/365
- Input Support: SRT, RTMP, Dash/HLS, Multicast/UDP
- Output support: Dash/HLS, Multicast/UD
- Records to a file



# Cloud Gaming Video Server

OVERVIEW

ALL VPU  
PRODUCTS

QUADRA  
SERVER

BITSTREAMS

GAMING

SECURITY

# 400 gamers in a single session

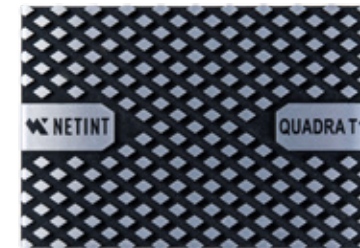
## Highest gaming density ever!

NETINT Quadra T-series modules are the world's first Smart VPUs that support AV1. With the embedded AI and 2D engines, it can support AI enhanced video encoding, region of interest, and content adaptive encoding. Supermicro X13 GrandTwin server is an AI accelerator. Together, these two super powers provide a powerful cloud gaming platform enabling streaming providers unprecedented high throughput with ultra-low latency to expand services and scale profitably.

- By offloading complex encoding and video processing to the Smart VPU, host CPU utilization is minimized resulting in a substantial increase in concurrent session density.
- Supermicro has a multi-node architecture optimized for NETINT's single-processor performance. Their resource saving architecture with modular design makes their platform cost effective.

**Delivers up to 80% CAPEX reduction and 97% OPEX reduction compared to competitive platforms.**

NETINT Quadra T1U Smart VPU

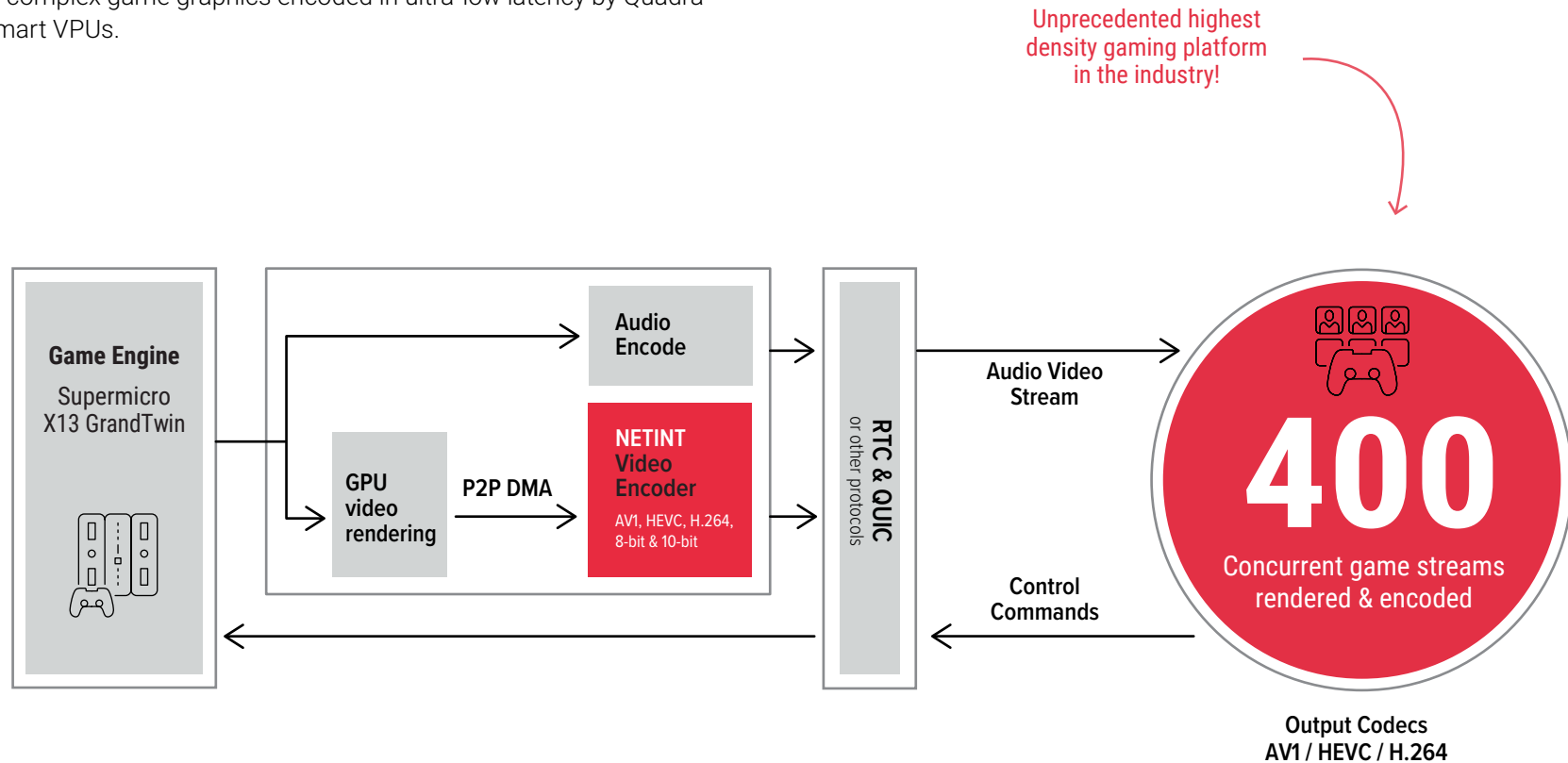


Supermicro GrandTwin 2U2N GPU



# Simple architecture

The Cloud Gaming Video Server leverages P2P DMA for live rendering of complex game graphics encoded in ultra-low latency by Quadra Smart VPUs.



# Smart VPUs for cloud gaming



## 400 Gamers per Session

Unprecedented highest streaming density per session delivers +40x increase compared to software.

## Dense Decoding

A single Quadra VPU (T1U or T1A) can decode 48x 1080p30 live streams making a VPU loaded server capable of connecting 100s of players at once.

## Lowest Cost

The industry's most cost efficient server platform with ultra-low CAPEX and OPEX costs.

## Wide Range of Formats

Encode up to 20x 4Kp30 live streams and supports a variety of formats in AV1, HEVC and H.264.

## Ultra Responsive Latency

Peer-to-peer DMA integration with popular GPUs for the lowest possible latency (8ms) between the game rendering engine and encoder.

## Easily Scalable

Simple drop-in upgrade path with enterprise NVMe integration on any x86 or Arm-based server.

# Cloud Gaming Video Server

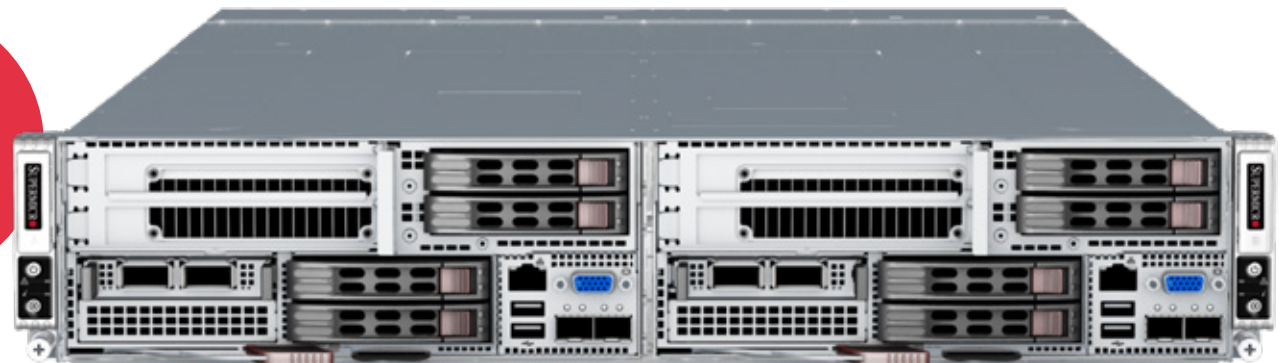
## Finally, profitable cloud gaming

Built on the Supermicro X13 GrandTwin™ server platform, the NETINT Cloud Gaming Video Server boasts multi-node architecture optimized for single-processor performance, ideal for Smart VPUs.

### This server supports:

- Up to 400 720p30 cloud gaming sessions
- AV1 / HEVC / H.264 video encoding
- Up to 8K and 60fps

Processor Support	Single 4th Gen Intel® Xeon® scalable processors per node (350W TDP w/ air cooling or liquid cooling)
Memory Capacity	16x DIMM slots, DDR5-4800 memory
Expansion	Up to six 2.5" PCIe 5.0 NVMe per node
Networking	PCIe 5.0 OCP 3.0 compliant AIOM slots. Front I/O module supports 10G/25G NIC, or AIOM(OCP 3.0).
I/O	Front I/O and Rear I/O configurations for data center hot and cool aisle integration and increased serviceability
System Management	Built-in server management (IPMI 2.0, virtual media over LAN and KVM-over-LAN support) with dedicated LAN port. RoT (Root of Trust) ready
Flexible IO	up to 6x U.2 NVMe or SATA drives support. 1x DW FHFL PCIe GPU support
OS Boot Drive	2x M.2 2280 NVMe or SATA slots onboard
System Cooling	4x heavy duty 8cm PWM Fans (two from PSU)
Power Supply	up to 2200W/3000W 1+1 high-efficiency redundant (Titanium level)
Dimensions	H: 3.46" x W: 17.67" x D: 28"





# Security Surveillance

VPU Dense Decoding and AI Inferencing

OVERVIEW

ALL VPU  
PRODUCTS

QUADRA  
SERVER

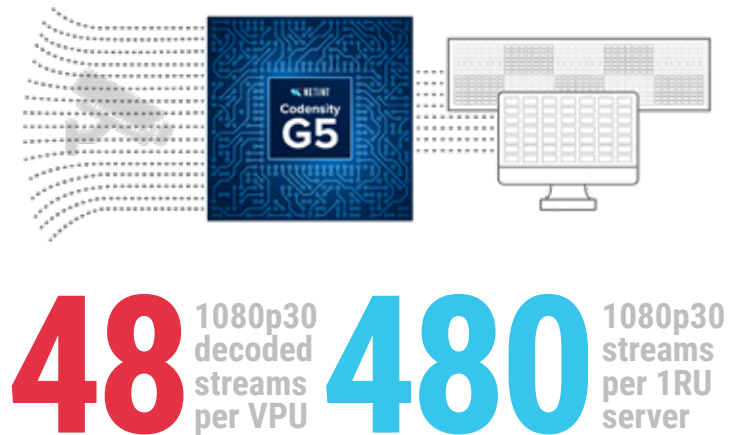
BITSTREAMS

GAMING

SECURITY

Reduce hardware, reduce power draw and **reduce storage** archive while enabling business to grow.

# Dense Decoding

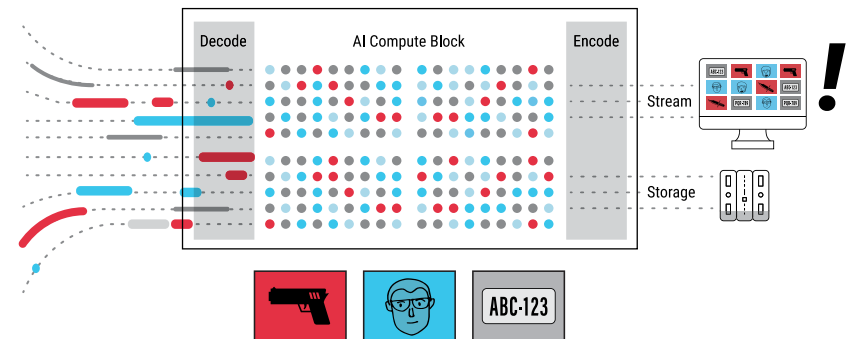


Manage 100's of camera feeds with AI assistance

A single Quadra VPU (T1U or T1A) can decode 48x 1080p30 live streams. Considering 1RU Quadra Video Server configuration may house up to 10 VPUs, our decoding capacity far outperforms what a GPU is capable of for advanced AI analytics operations.

Quadra VPUs have a high-performance hardware decoder capable of decoding codecs: H.265 (HEVC), H.264 (AVC), VP9 and JPEG.

# AI Inferencing

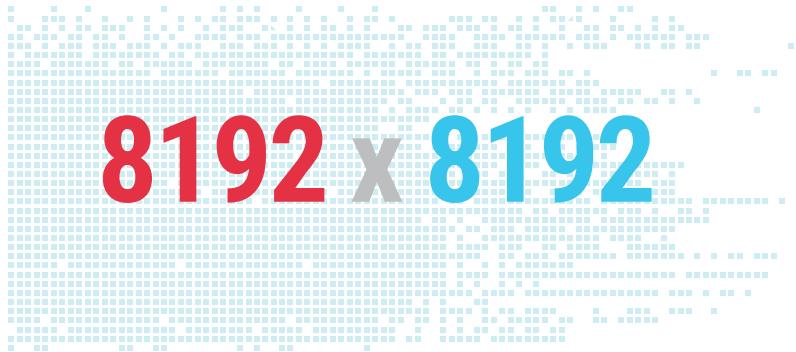


Key Frame Detection identifies alerts so agents only focus on the priorities.

Increase your capacity by 10x by filtering out 90% of the noise. VPUs streamline video analysis and eliminate bottlenecks with high-efficiency prescreening security models. The key frame detection performs spot analysis on every 10th frame to identify key objects. Escalated alerts go to agent for review and intervention.

Quadra demonstrates low-latency processing for real-time applications while scaling for workload demands.

# High Resolution

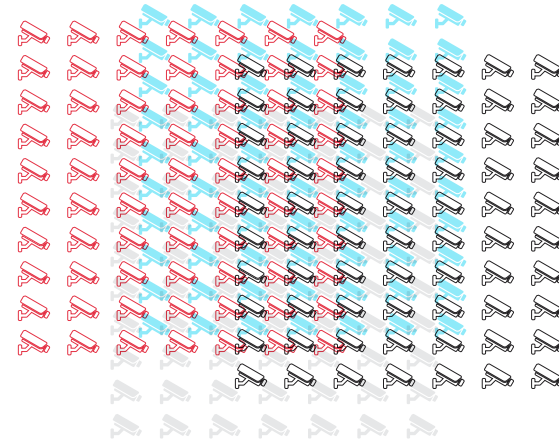


## 4K & 8K Resolutions

The decoder is designed to handle resolutions up to 8192x8192 pixels and supports smooth playback of 4K content at 125 frames per second (or 8K resolution at 60 fps when decoding 10-bit YUV video).

This capability ensures that Quadra VPUs can handle the most demanding video decoding tasks and high-quality applications.

# Legacy Cameras

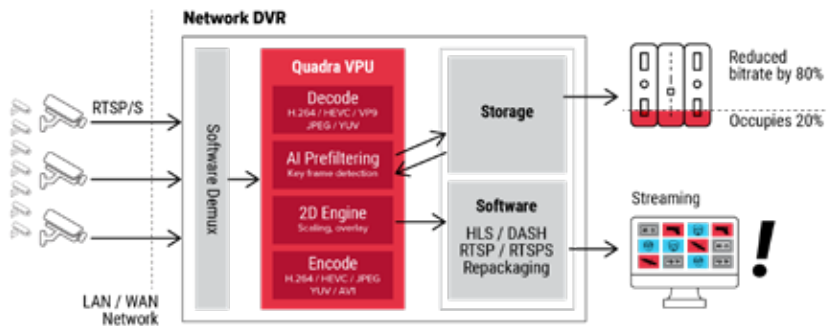


## Upgrade **without** replacing cameras

Phew. Large-scale legacy projects can keep their existing cameras because the **AI enhancements run inside the VPU chip**, processing your incoming video streams and adding image sharpening and facial recognition after the video is captured.

Ideal for any residential, commercial or industrial application.

# 80% Smaller Archives

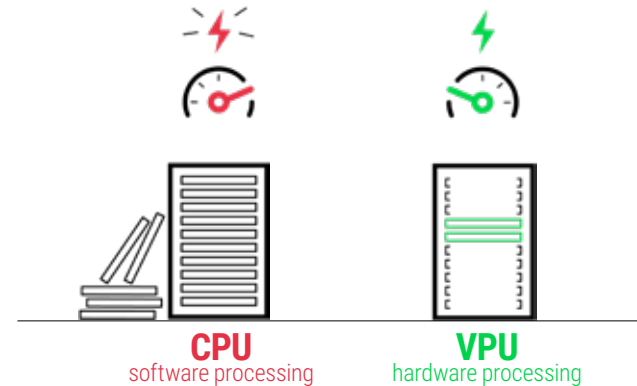


Archive high-quality surveillance footage without the bulk.

Typically, the storage capacity of a video surveillance system is directly correlated to the CAPEX and OPEX investment; the more you spend, the more you get. That's not the case here.

**VPUs use AI video compression to reduce the bit rate of whole archives with zero quality loss.** This enables nDVR storage to reduce the content to only 20% of its volume. Voila!

# Reduce Costs



Low Power Consumption

Hardware now beats software. ASIC VPUs are engineered for 100% processing video. Tasking VPUs with this single operation simplifies and accelerates the workflow by freeing up the CPU to do other video tasks only it can do, resulting in massive 10X more throughput at 1/10 th the cost.

In fact, incorporating VPUs in your video workflow will relieve 8 of 10 servers, enabling them to be re-purposed or eliminated.  
**80% less hardware uses 80% less energy.**

# We were first.

We created the VPU category to exponentially reduce costs, shrink server footprint and expand global reach.

**100,000**  
VPUs sold

**ONE TRILLION**  
minutes streamed



[sales@netint.com](mailto:sales@netint.com)  
[netint.com](https://netint.com)

OVERVIEW

ALL VPU  
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