北京
2019

遨游“视”界 做你所想
Explore World, Do What You Want

边缘计算架构如何融合视频编码与存储

主讲人：刘伟 / Alex Liu
联合创始人，COO

出品：LiveVideoStack 音视频技术社区 CSDN

深圳
2019

遨游“视”界 做你所想
Explore World, Do What You Want

LiveVideoStackCon 2019 深圳

2019.12.13-14

成为讲师： speaker@livevideostack.com

成为志愿者： volunteer@livevideostack.com

赞助、商务合作： kathy@livevideostack.com

出品：LiveVideoStack 音视频技术社区 CSDN

About NETINT

- IC design innovator
- Shanghai, Vancouver, Toronto
- World first Computational Storage ASIC
- World first ASIC with PCIe 4.0 certificate

镕铭半导体
NETINT TECHNOLOGIES

演讲主题

01 Market Trends

02 Video Transcoding Needs to Scale at Cloud and Edge

03 Use Cases

04 Codensity Fusion -- ASIC-based Computational Storage

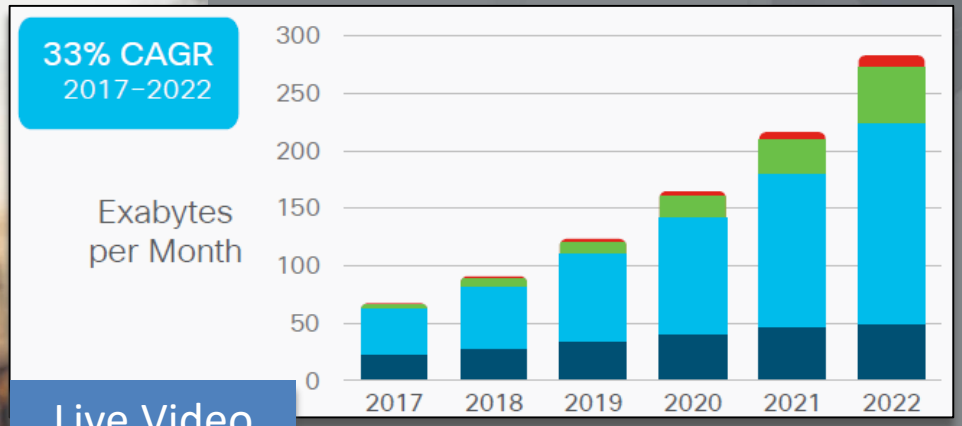
Video Traffic is Large and Growing

IP Video will be

82%

of Global IP Traffic by 2022

Global Internet video by subsegment



Live Video will grow

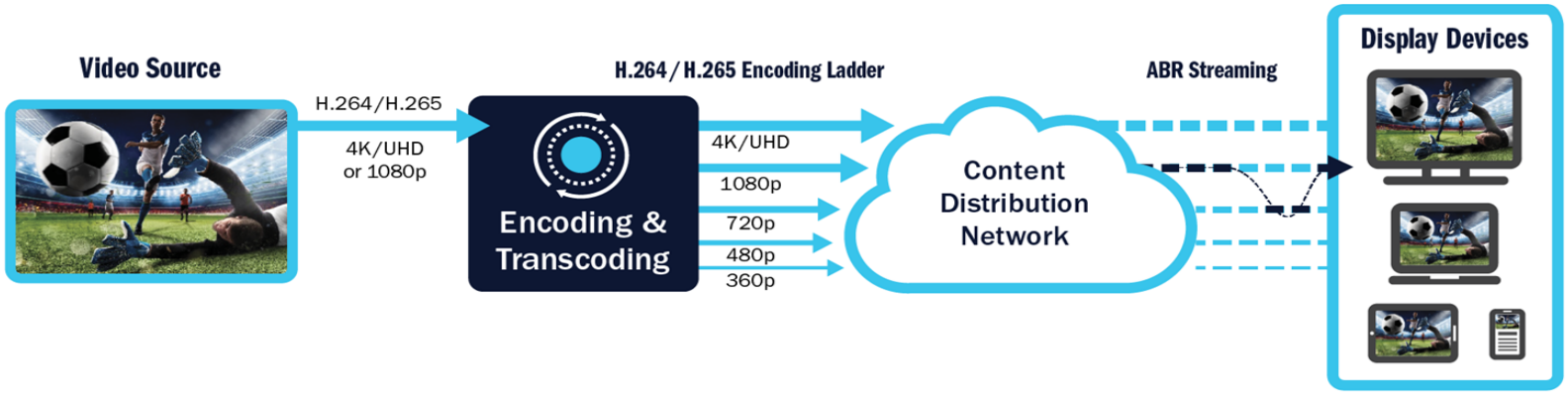
15x

By 2022

- Video Surveillance (2%, 3%)
- Live Internet Video (5%, 17%)
- Long-Form Internet VoD (61%, 62%)
- Short-Form Internet VoD (32%, 18%)

镕铭半导体
NETINT TECHNOLOGIES

Video Streaming Delivery Architecture



Pro:

- Low CapEx
- Easy to scale out in same DC

Cons:

- High OpEx
- High Latency
- Bottleneck for UHD & other emerging applications

The Motivation to move transcoding to Edges

- High bandwidth with reduced cost
- QoE
- Realtime - low latency
- Enhanced Security

镕铭半导体
NETINT TECHNOLOGIES

Typical Use Cases of Video Edge Computing

Edge CDN for video on demand

User generated Live Video

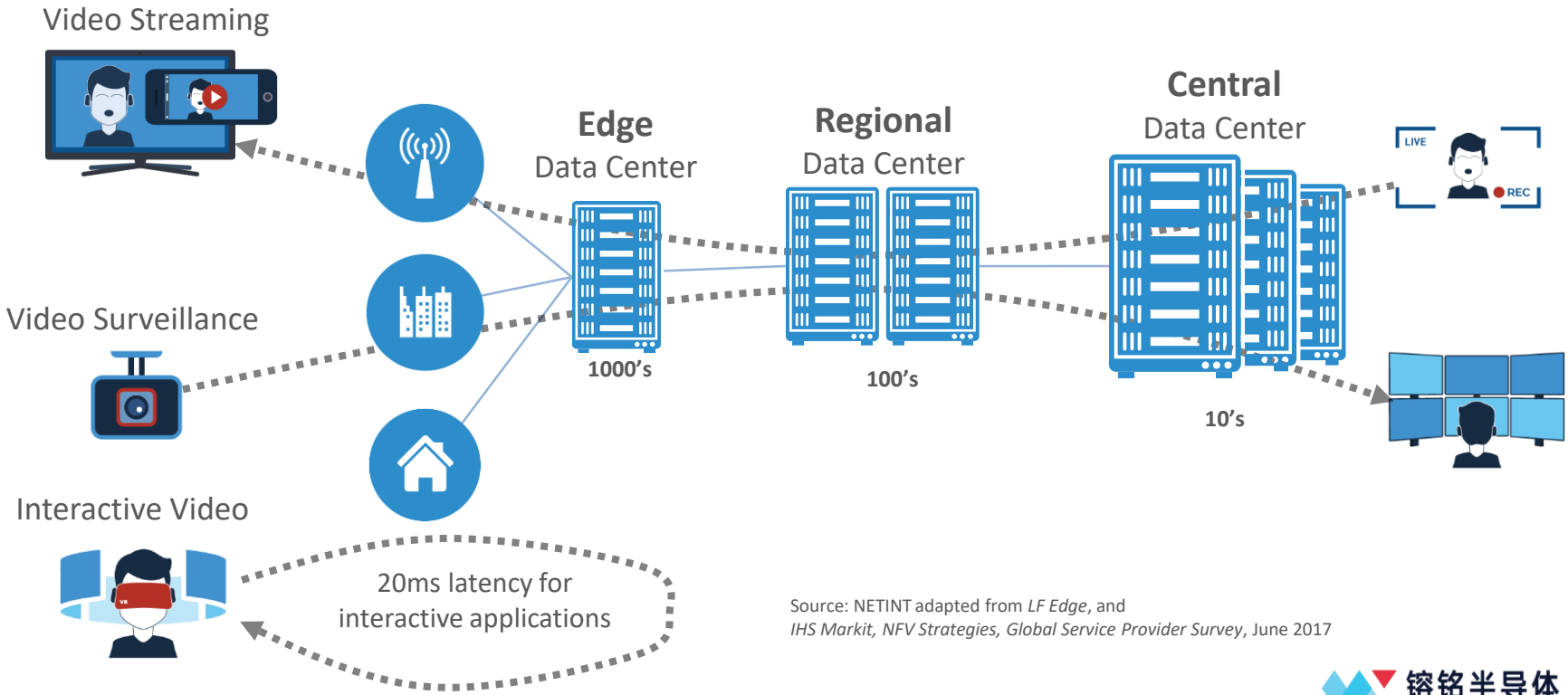
AR/VR

Cloud Gaming

Analytics at Edge

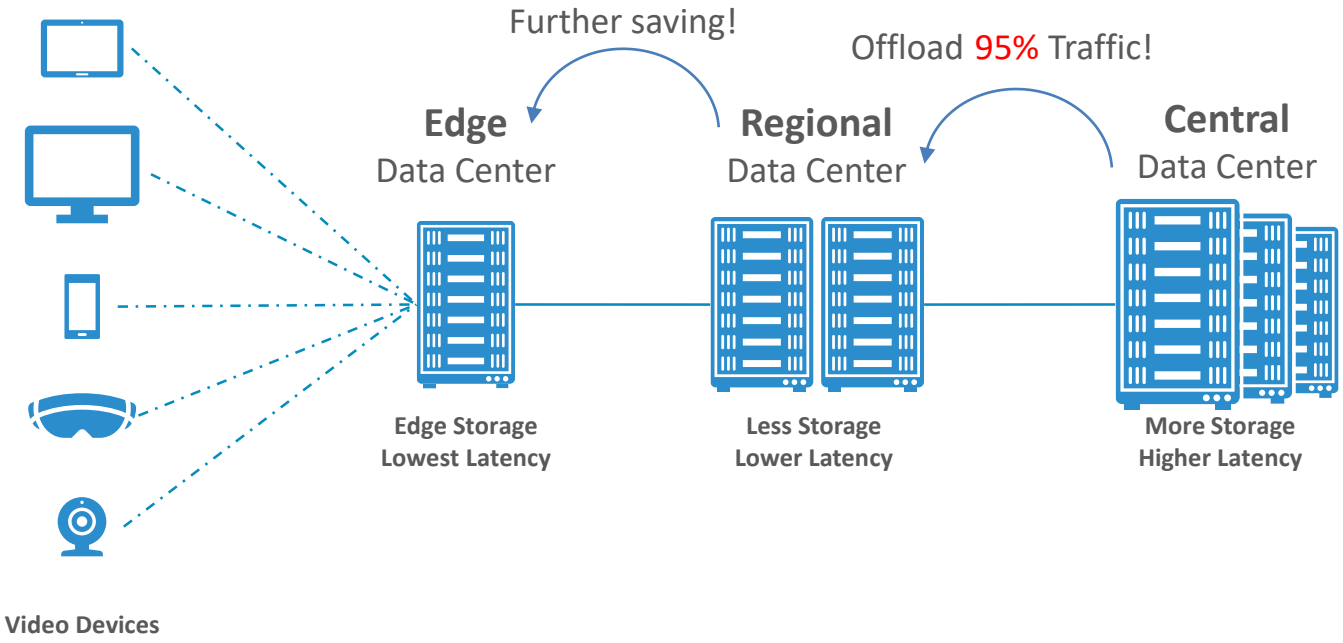
Autonomous Car data Edge storage

Use Case: Edge Computing

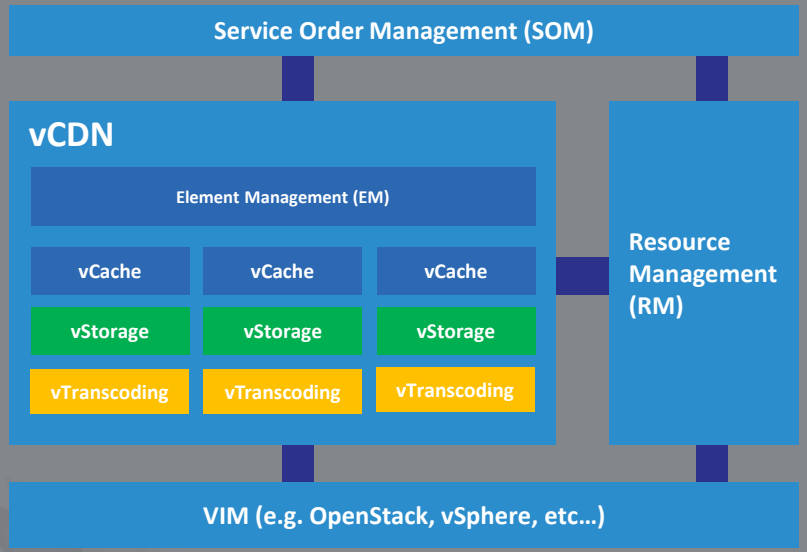


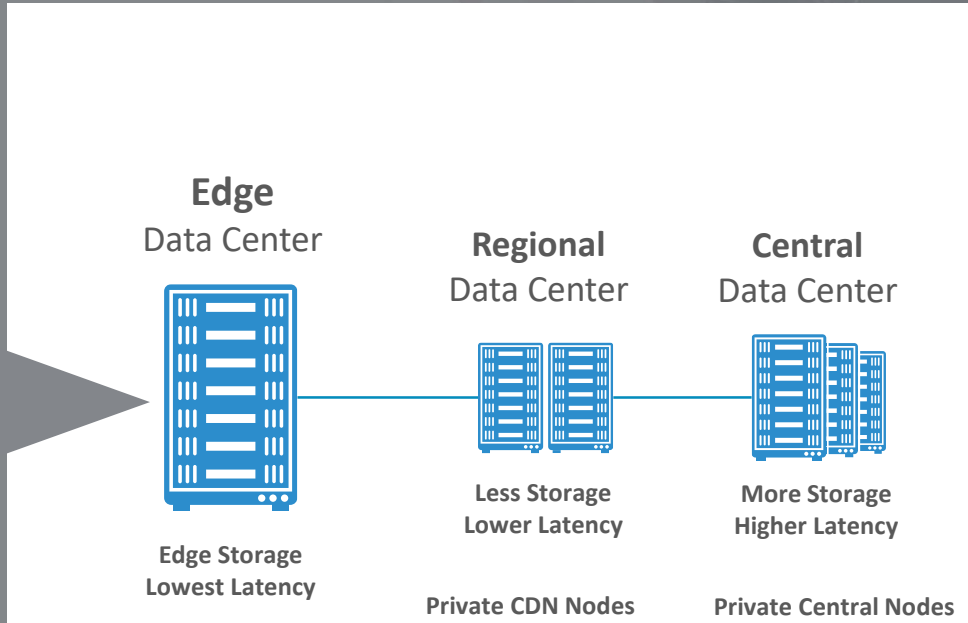
Source: NETINT adapted from *LF Edge*, and
IHS Markit, NFV Strategies, Global Service Provider Survey, June 2017

Use Case: Edge CDN

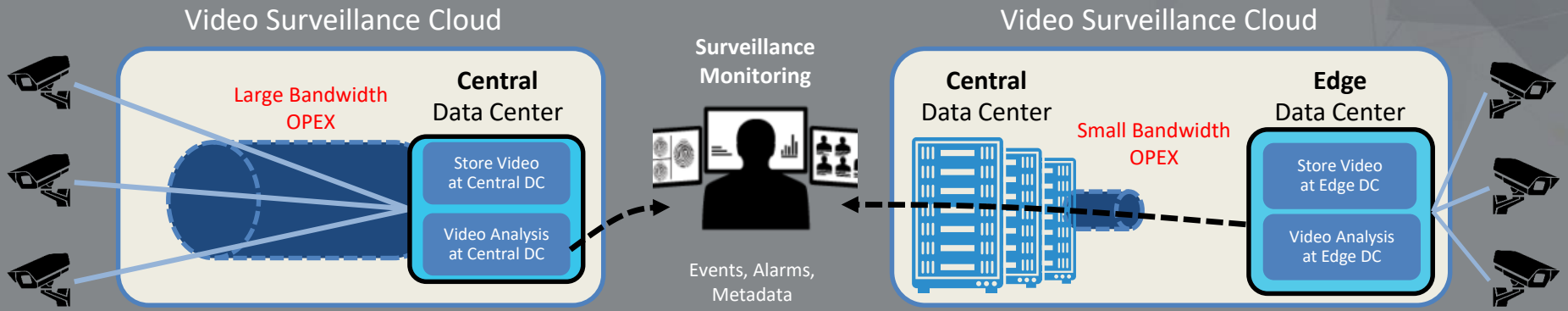


Use Case: Edge Encoding and Storage - MEC & Open Cache at Edge

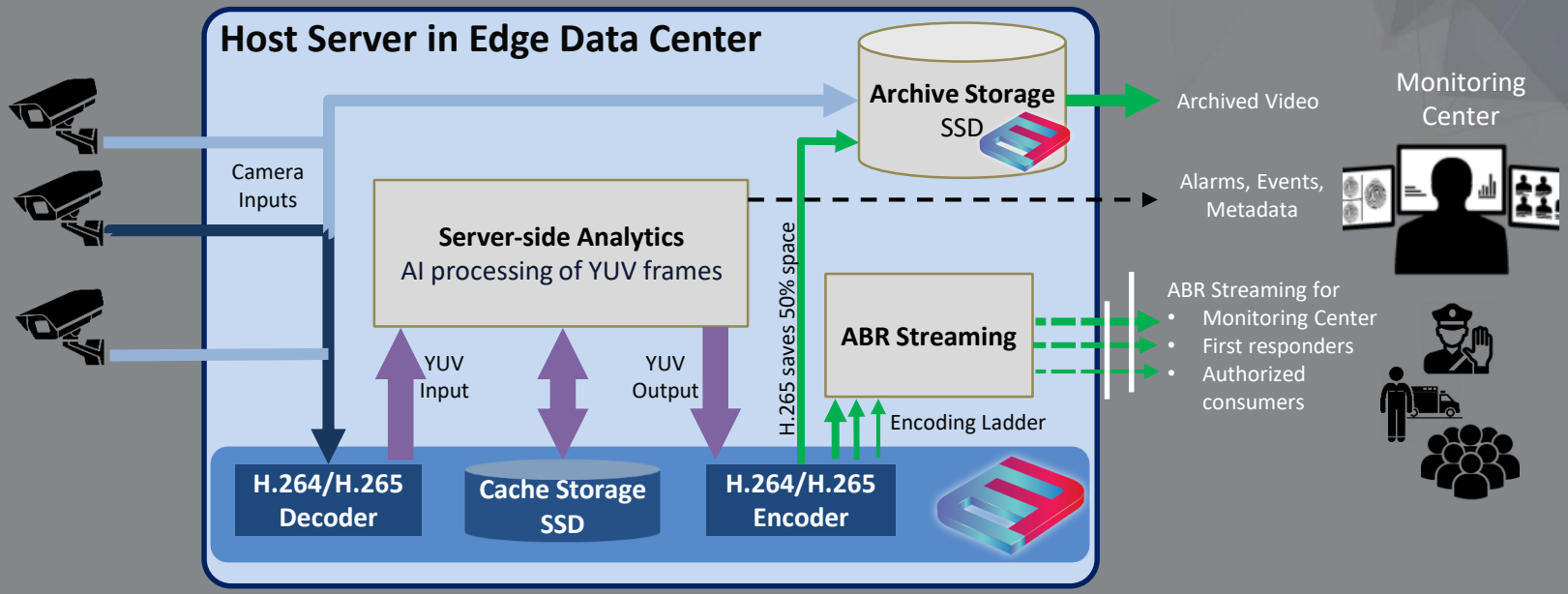




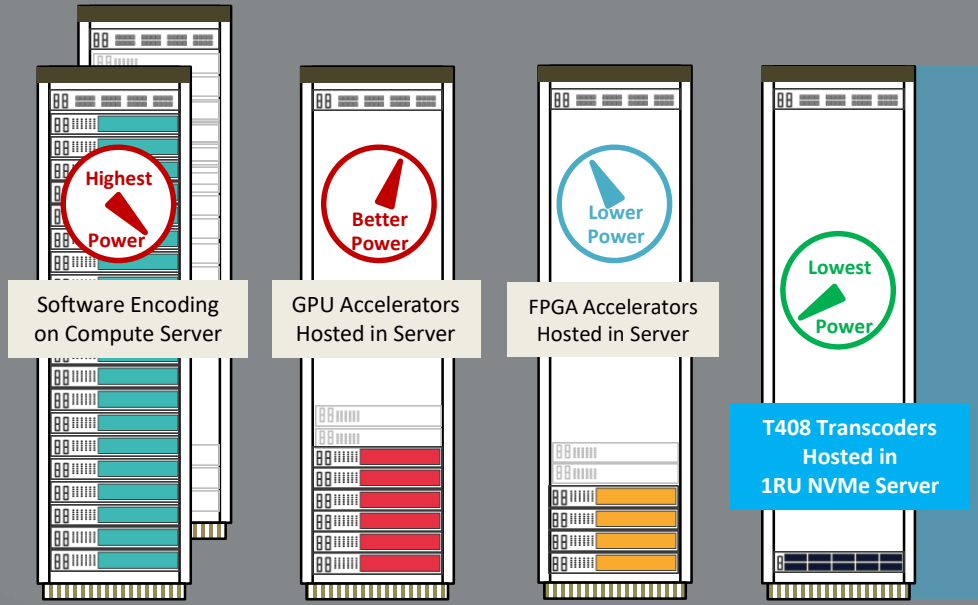
Cloud video surveillance processing is moving to the edge



Video Surveillance Workflows



ASIC based encoding: Density and Power

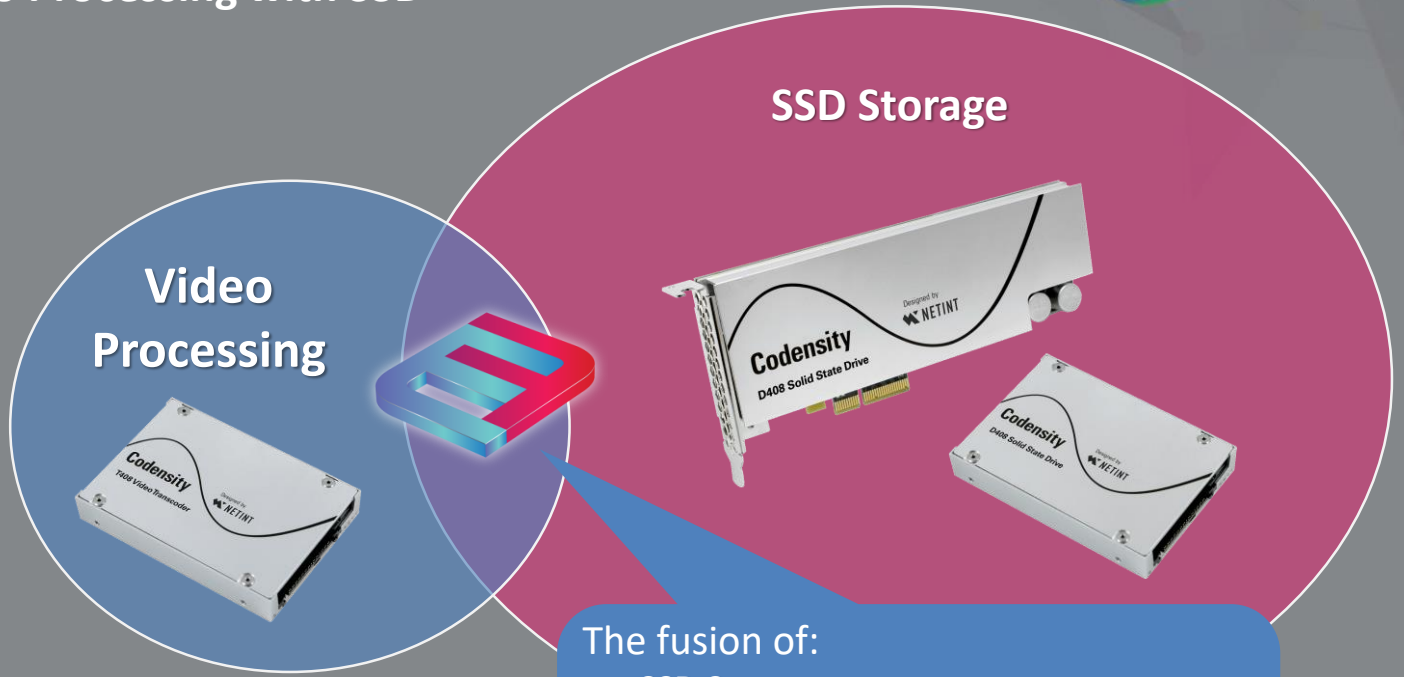


Codensity T408 Video Transcoders

- ✓ NVMe Interface
- ✓ ASIC-based Transcoding
- ✓ Highest Density
- ✓ Least Rack Space
- ✓ Lowest Power

Approximated infrastructure required for
80x 1080p30 Encoding Streams, or 40x Typical Encoding Ladders.

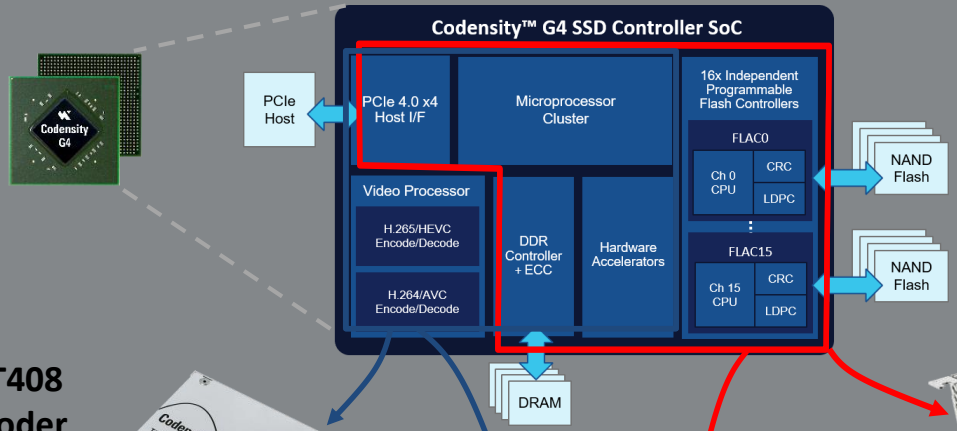
Computational Storage:
Video Processing with SSD



The fusion of:

SSD Storage combined with
Video Processing into a
Low-power compact module, designed for
Edge Deployment in the
Video Cloud.

Scaling-up Video Transcoding Together With Storage

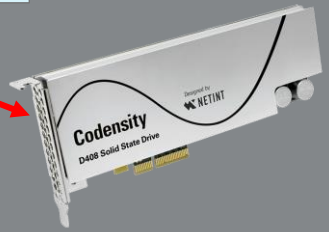


Codensity™ G4 SSD Controller SoC

Computational Storage Architecture:
Advanced SSD controller logic with
H.264/H.265 video processors

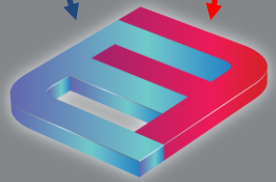
Codensity™ T408 Video Transcoder

For Video Streamers
and Content Providers



Codensity™ D408 PCIe 4.0 NVMe SSD

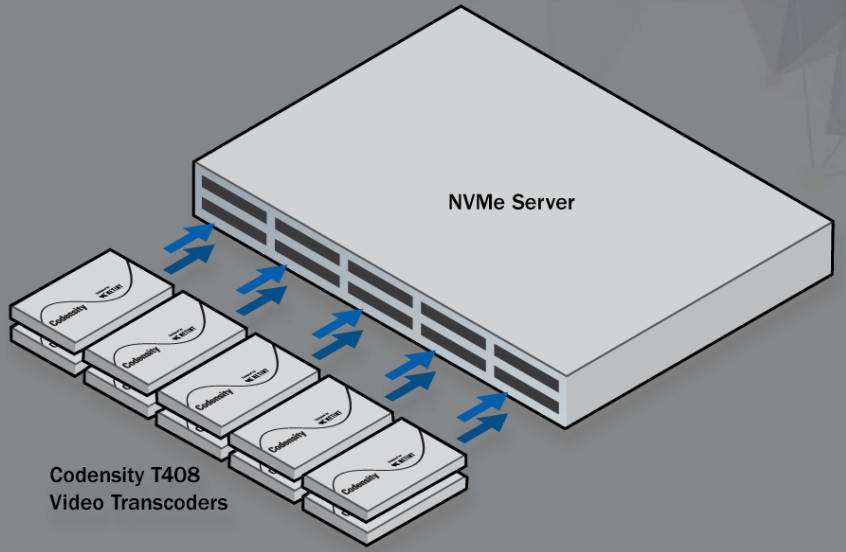
For Application Developers
and Datacenter Operators



Codensity™ EdgeFusion E408

The fusion of
SSD Storage combined with
Video Processing into a
Low-power compact module, designed for
Edge Deployment in the
Video Cloud.

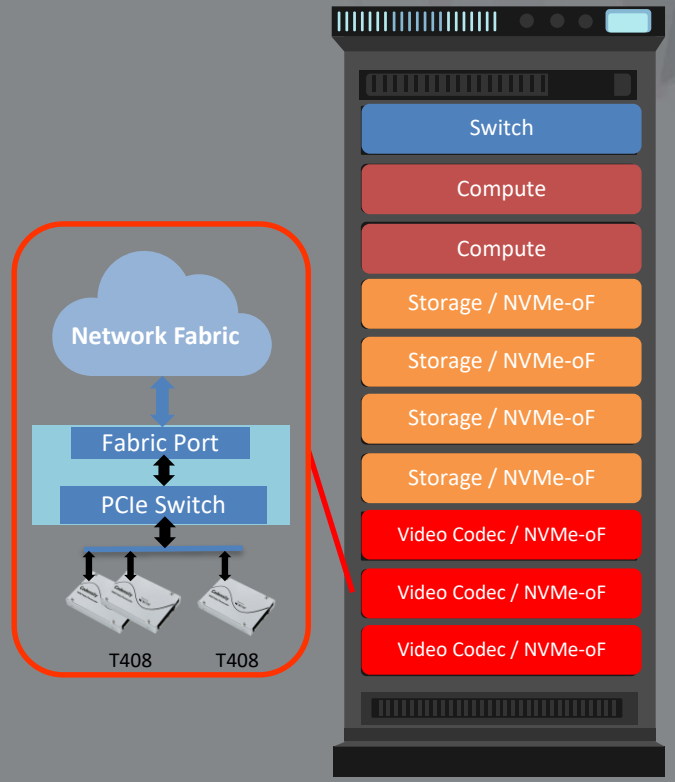
Scaling-up Video Transcoding within NVMe Servers



- Leverages standard NVMe drivers
- Transcoding U.2 modules plug into SSD slots of NVMe Server

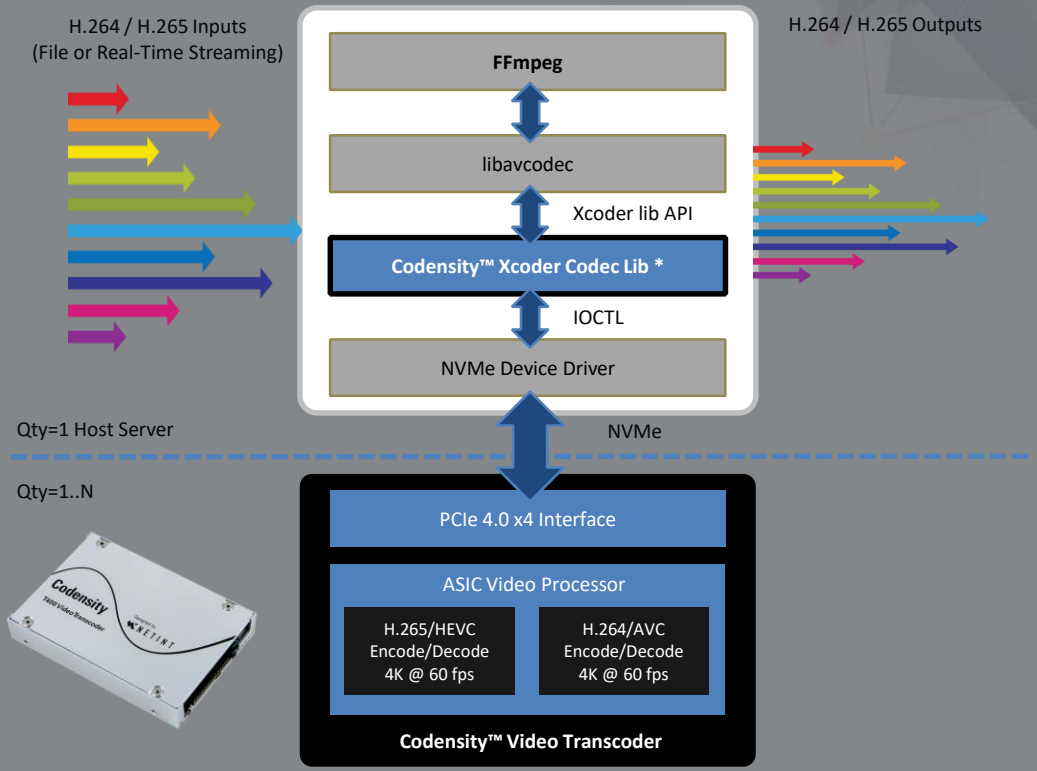
Scaling-out Video Transcoding with NVMe-Over-Fabrics

- Work with proven NVMe and NVMe-oF device drivers
- Scaling transcoding resources outside servers
- Sharing transcoding resources among servers

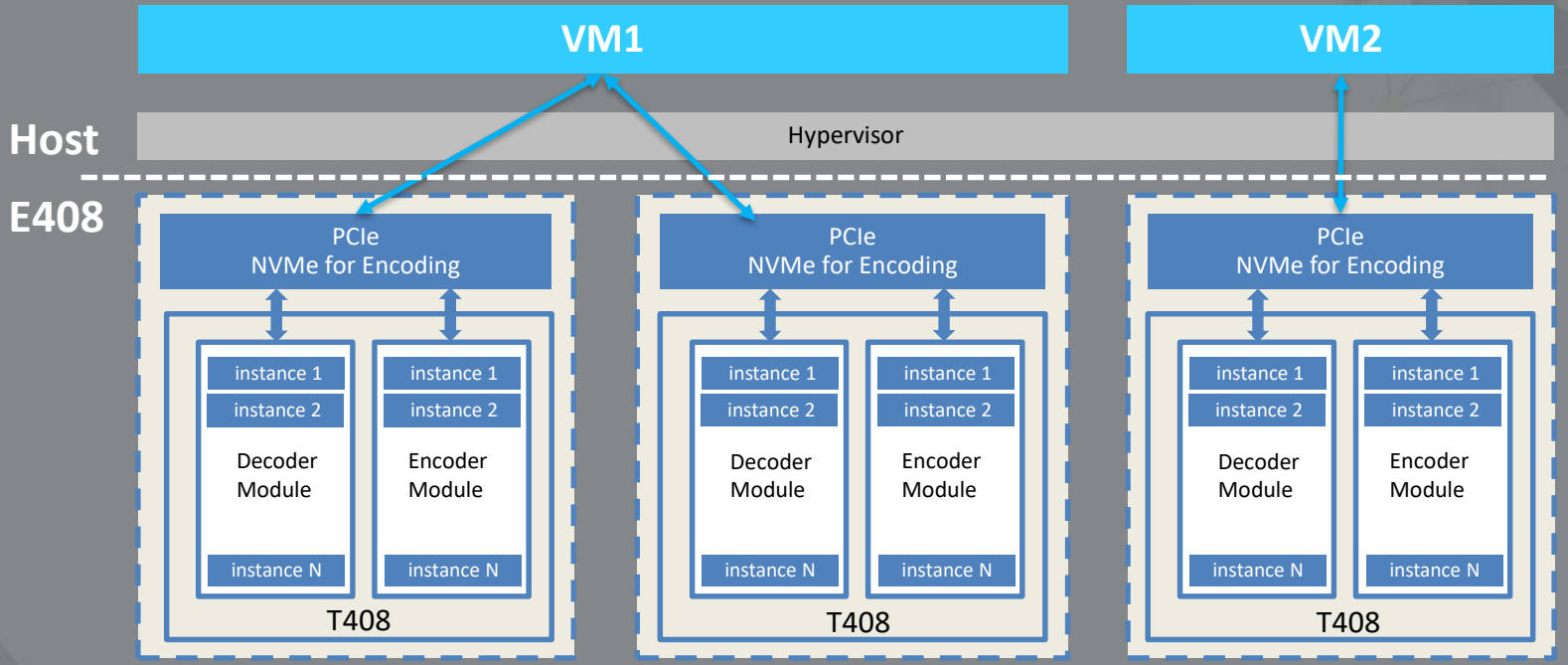


Codensity T408 Transcoder - SW Integration

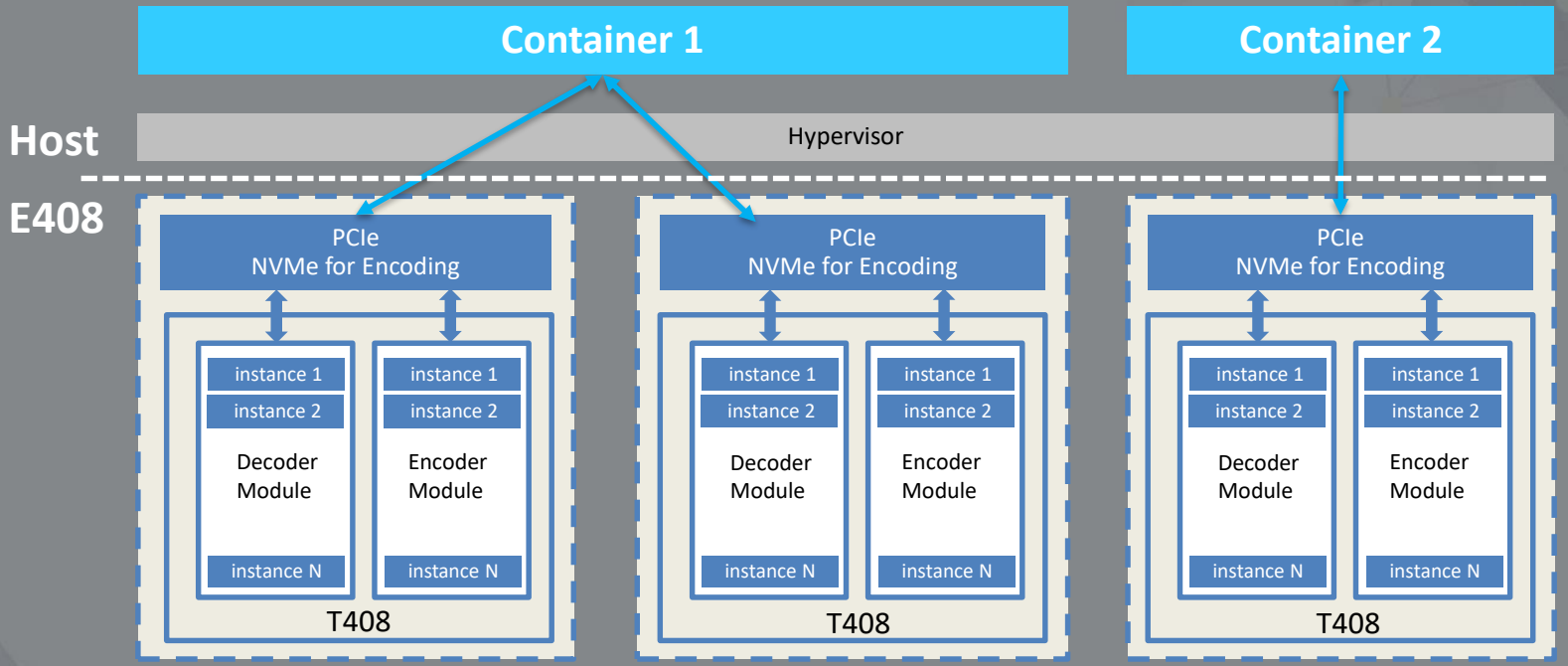
- FFmpeg integration through Codec Lib
- Control through standard NVMe interface



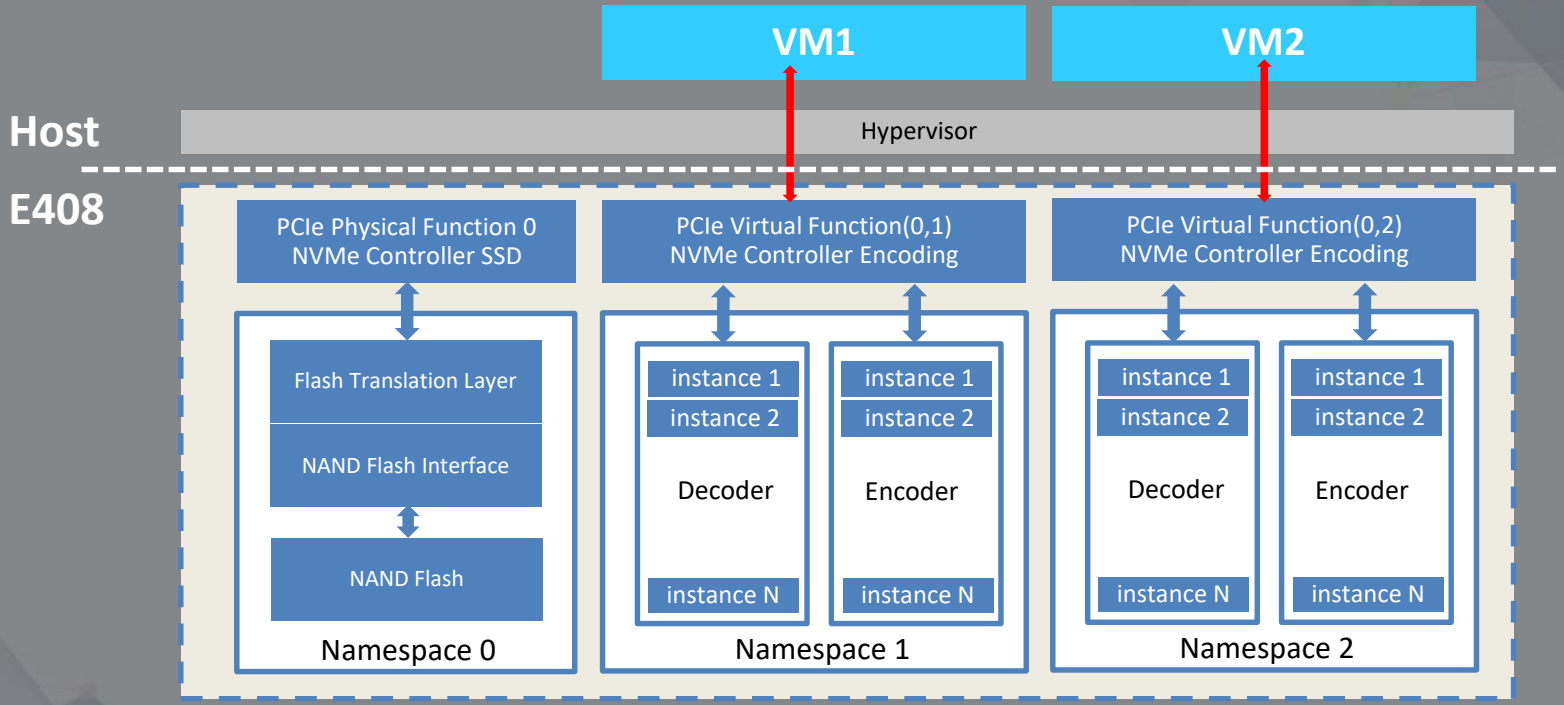
Virtualization for Cloud with Device-passthrough
Allocate Different T408s to Different Virtual Machines



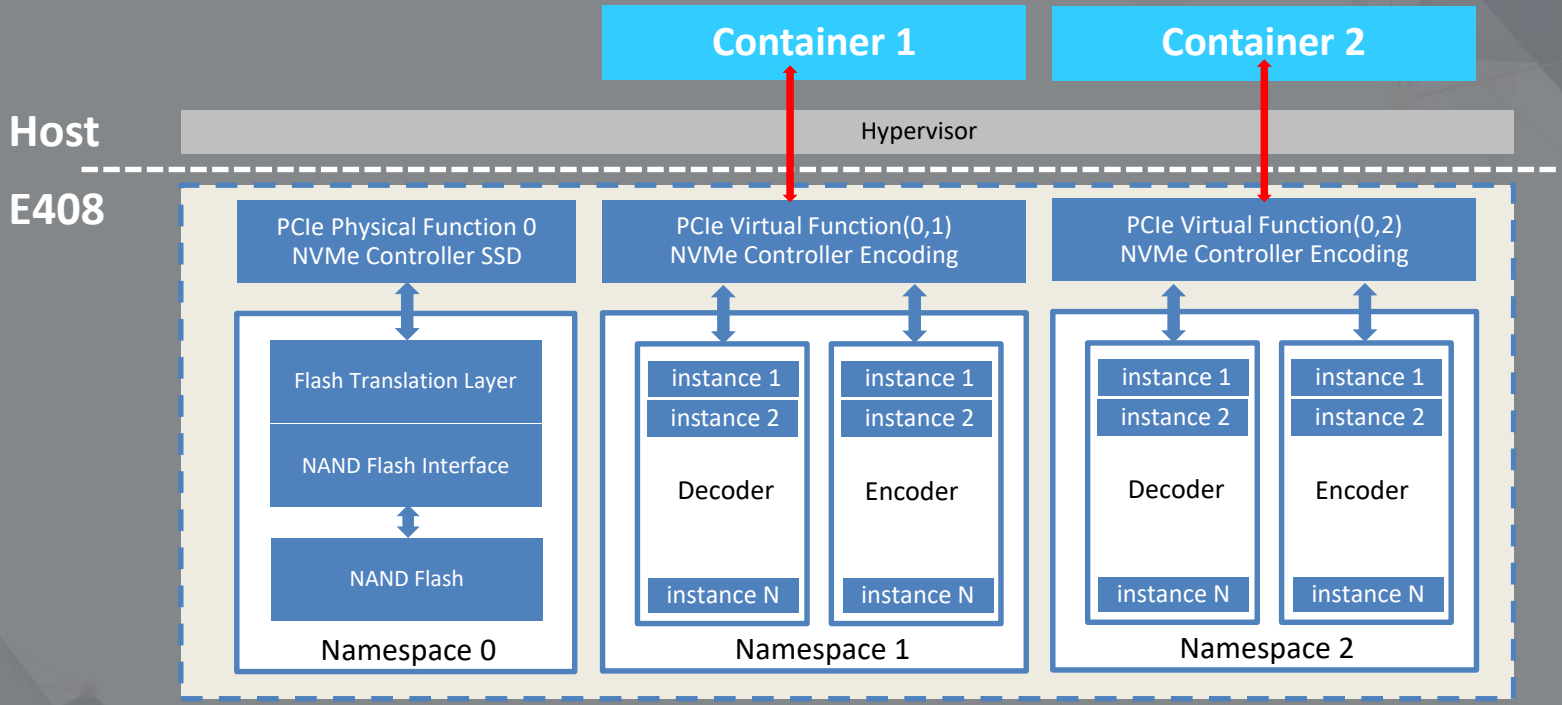
Virtualization for Cloud with Device-passthrough
Allocate Different T408s to Different **Containers**



Virtualization for Edge with SR-IOV
Share One E408 among Virtual Machines



Virtualization for Edge with SR-IOV
Share One E408 among Containers



北京
2019

遨游“视”界 做你所想
Explore World, Do What You Want

Thank you

出品：LiveVideoStack 音视频技术社区 CSDN