



**DPDK**  
DATA PLANE DEVELOPMENT KIT

# "Serverless" DPDK

DPDK Summit - San Jose – 2017

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#DPDKSummit

# DPDK Everywhere



- ▶ SmartNIC Market Share and Projections
- ▶ Current and Emerging SmartNIC Use Cases
- ▶ Challenges with current generation SmartNICs
- ▶ Accelerating Next Gen SmartNICs with DPDK
- ▶ Nirvana?

# What is a SmartNIC?



## Smart NICs

- Multi-core / Network Processor based Adapters
- Crypto Accelerator w/ IPSEC / SSL
- OVS Offload, Business Application offload
- Customer Programmable

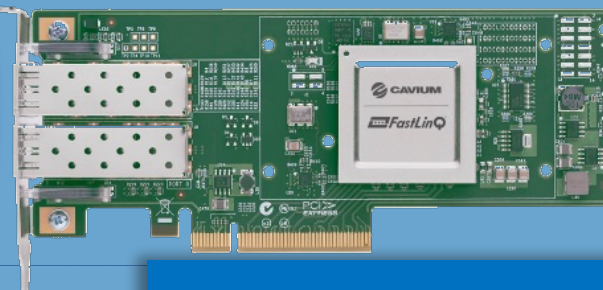


## SmartNIC

### Common Features

- Stateless Offloads
- Tunneling/Overlays: VXLAN, NVGRE, GENEVE
- SR-IOV
- DPDK PMDs

## Standard NIC



### Standard NIC

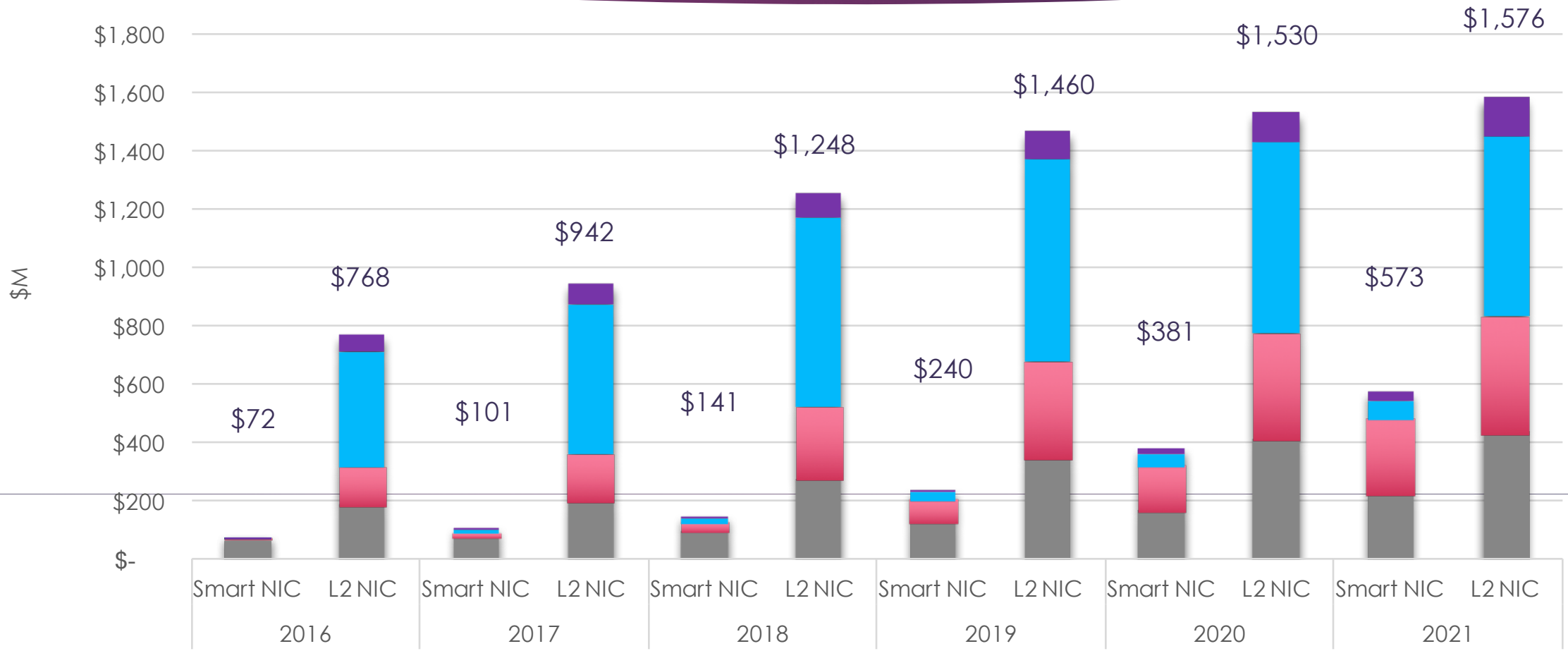
- Speed transitions 10G/25G/40G/50G/100G
- General purpose offloads - RDMA, Storage
- Hardwired or Micro-coded or mix

# SmartNIC Market Size: 2016-2021 (Network Acceleration)

Cavium Built Model for 10GbE & Higher Speeds



# DPDK



■ T1 MDC ■ T2 Cloud/Telco ■ Enterprise/Private ■ Storage

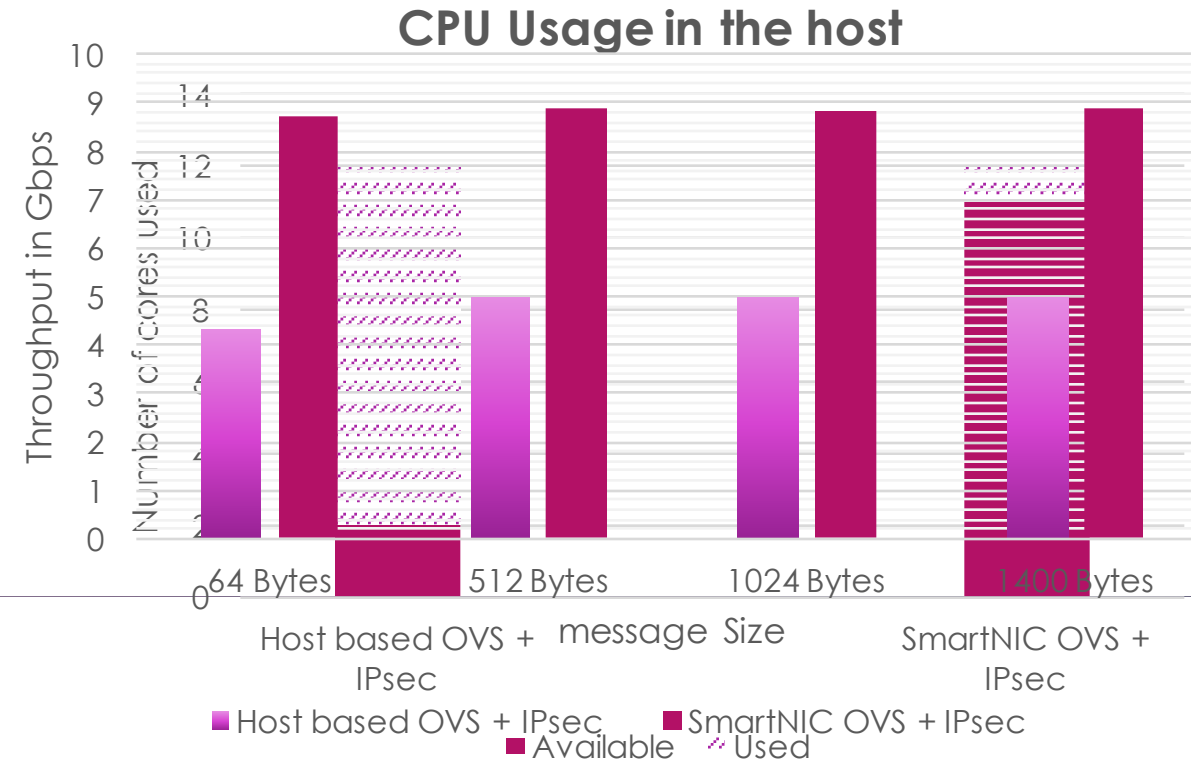
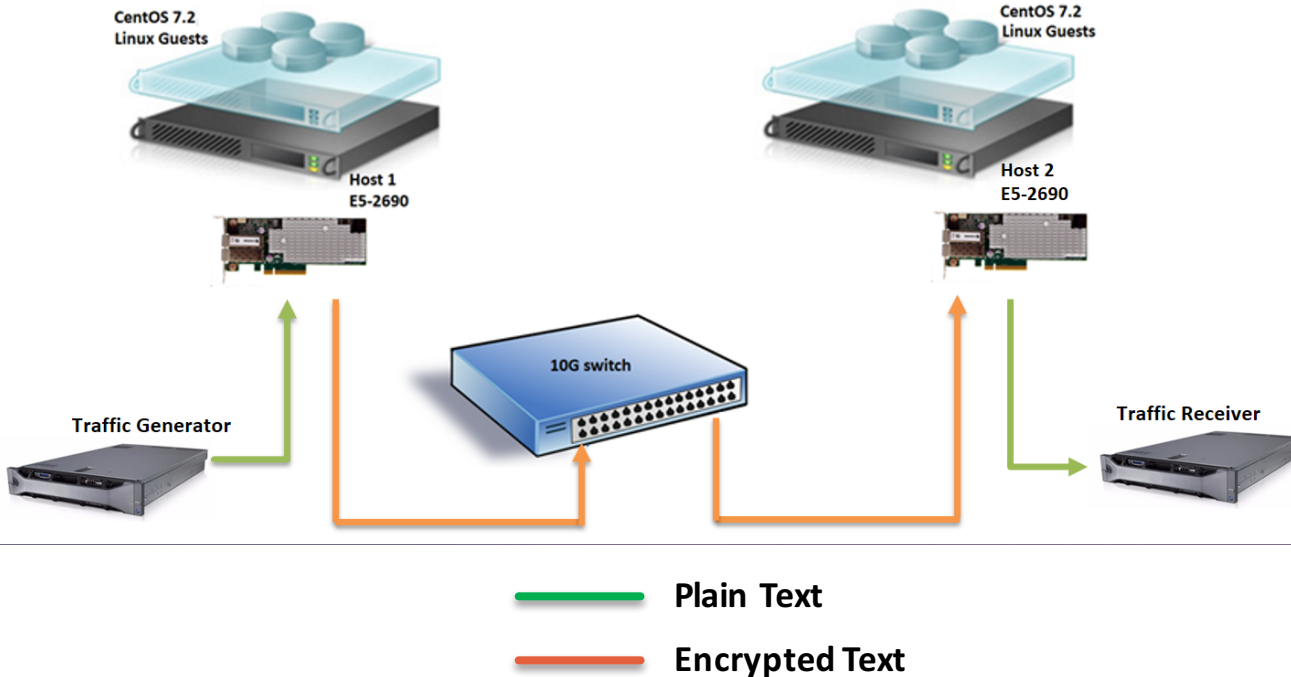
# SmartNIC is a platform for Innovation



All server compute resources need to have a revenue tie-in



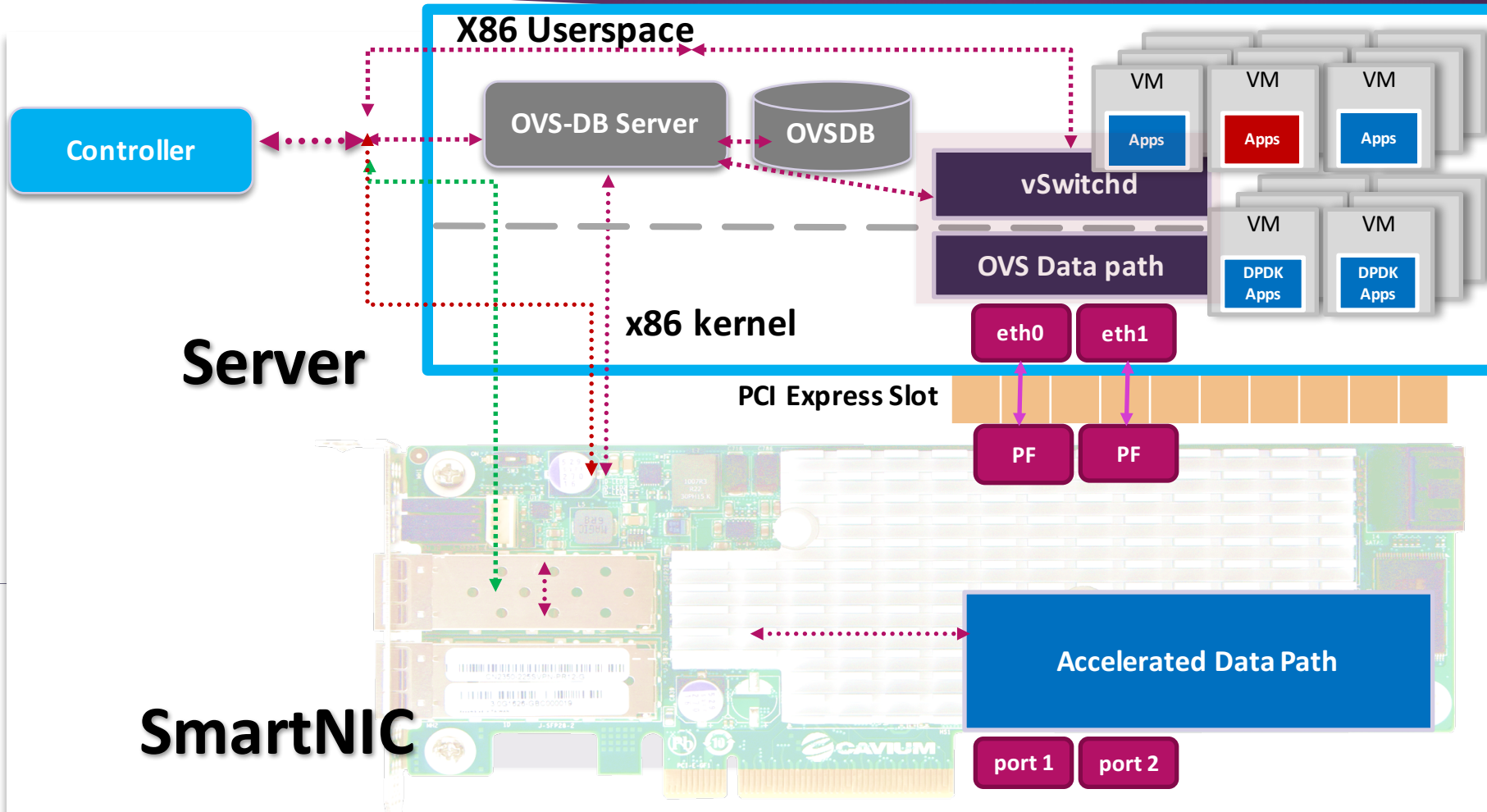
# OVS + IPsec Performance Benchmark



Benchmarking Test Setup

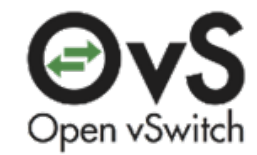
Performance

# Current Approach to OVS Offload on SmartNIC



## Challenges

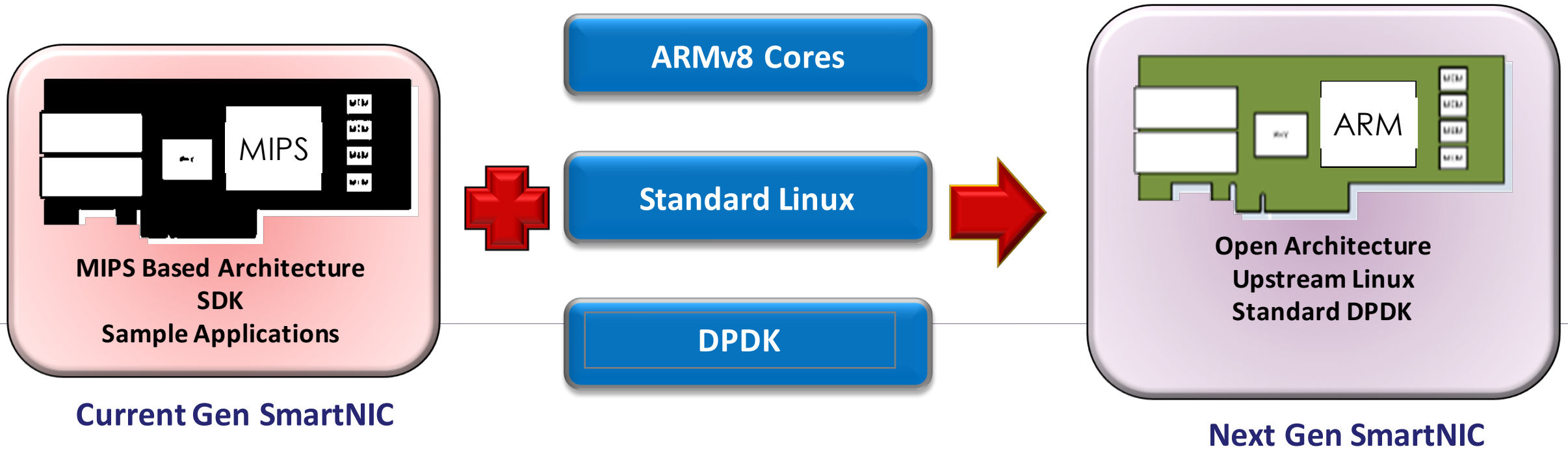
- **Proprietary:** SimpleExec - Run to completion model, SDK
- **Deployment Model:** Packaged solution or SDK
- **Implications:** Platform specific skills, customer application porting, time to market, ecosystem
- *Need to simplify the SmartNIC*
- *Require a new Networking Data Plane*



SmartNIC accelerates the OVS Data path and restores CPU cores back to the server



# DPDK for the Networking Dataplane



# Why DPDK?



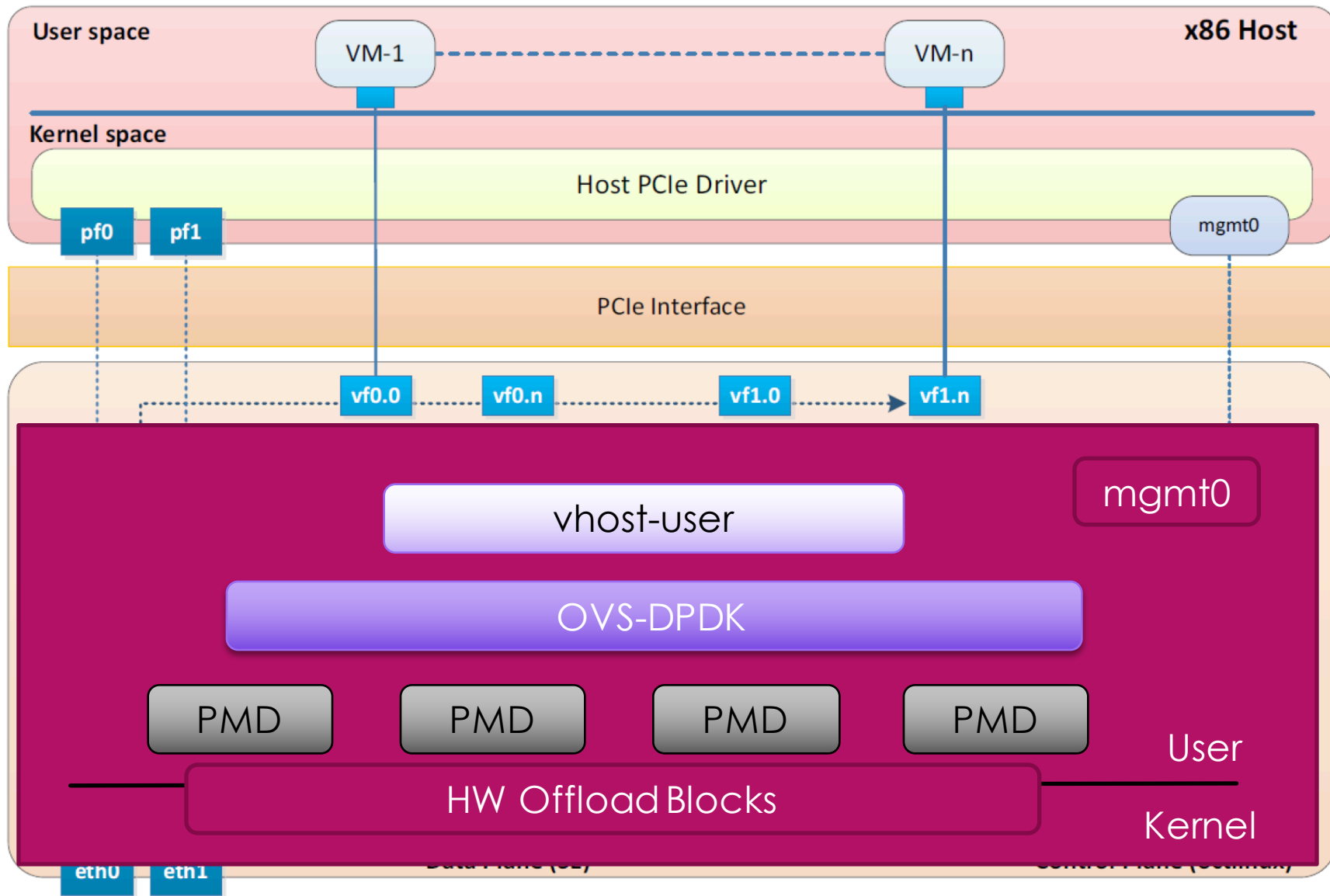
- ▶ DPDK is a “Proven” networking dataplane
- ▶ Majority of networking applications on x86 are written for DPDK
- ▶ Performance; Innovation; Licensing

# Why DPDK on SmartNIC?



- ▶ SmartNICs growth in Telco / NFV Use Cases
- ▶ ARMv8 ecosystem enables DPDK acceleration
- ▶ BYOA - Path of least resistance – offloading NFV apps to SmartNICs

# Before and After



# Potential Challenges

Taking DPDK to a embedded processor?

- Limited compute and memory resources
- Polling/Hogging
- Fixed Power Envelope

DPDK Version Dependency for NFV Apps

A simplified way of leveraging HW provided offloads

Performance?

Questions?

Thank  
You :)

▶ SmartNIC Panel Discussion at 11:40am!



That's it!