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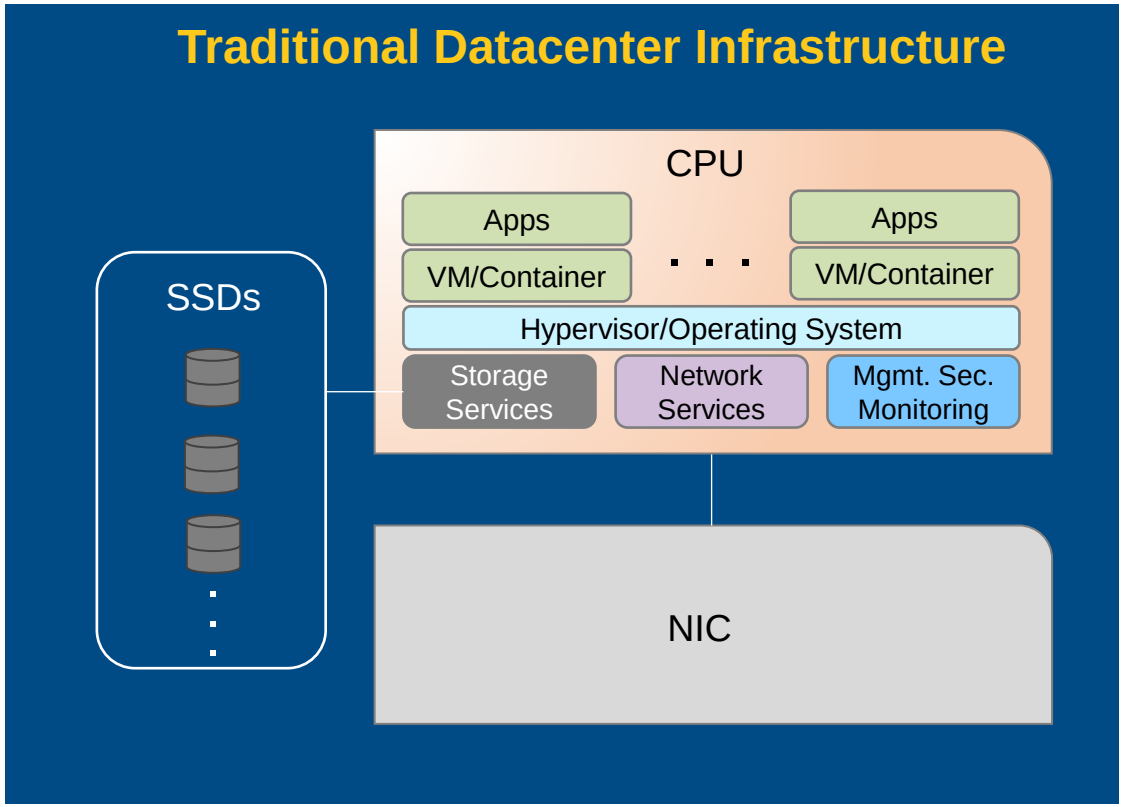
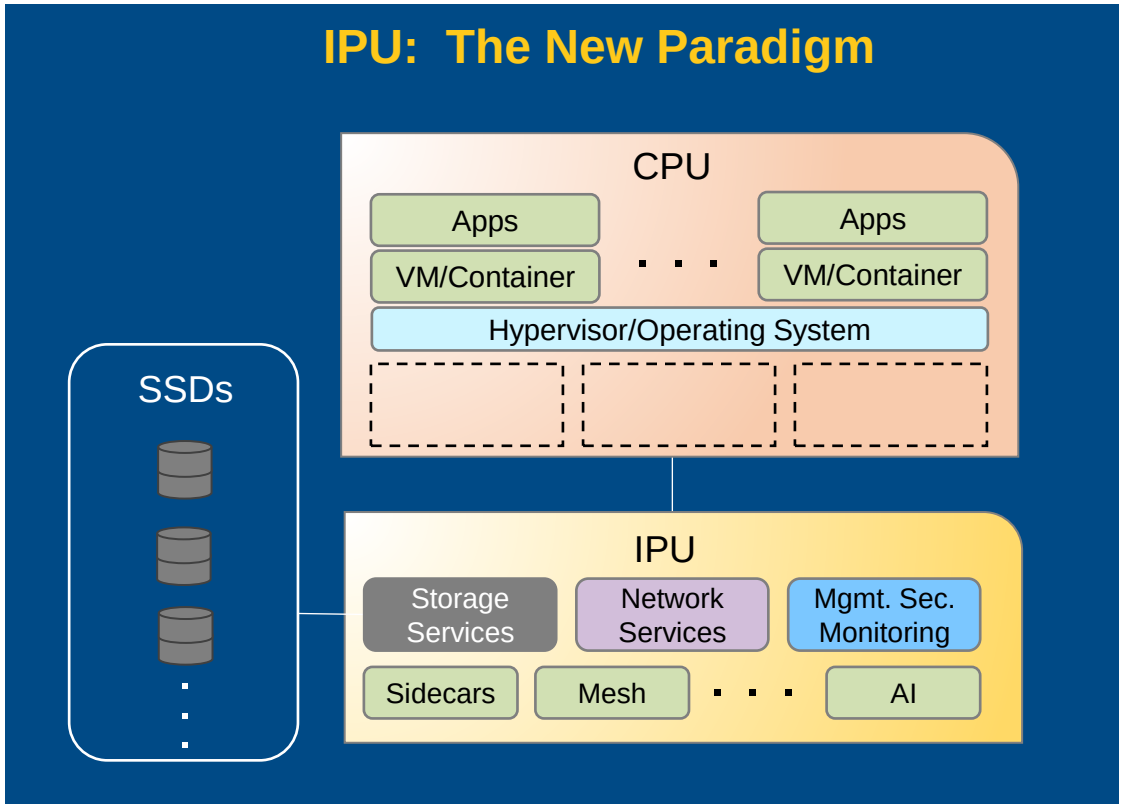
Transforming the Datacenter with IPUs

Kristie Mann
Intel Vice President and General Manager
Intel IPU Business

The IPU is Transforming Datacenter Infrastructure





The future: extending use cases and benefits without performance impacts

Hyperscalers were First to Adopt

Infrastructure Trends

Core Count ↑

Number of Devices ↑

Virtualized Services ↑

Driving Need for…

Security

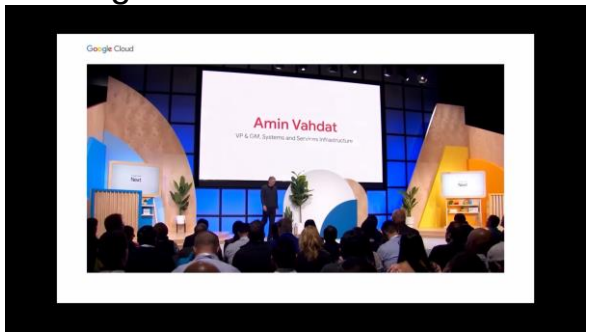
Offload

Acceleration

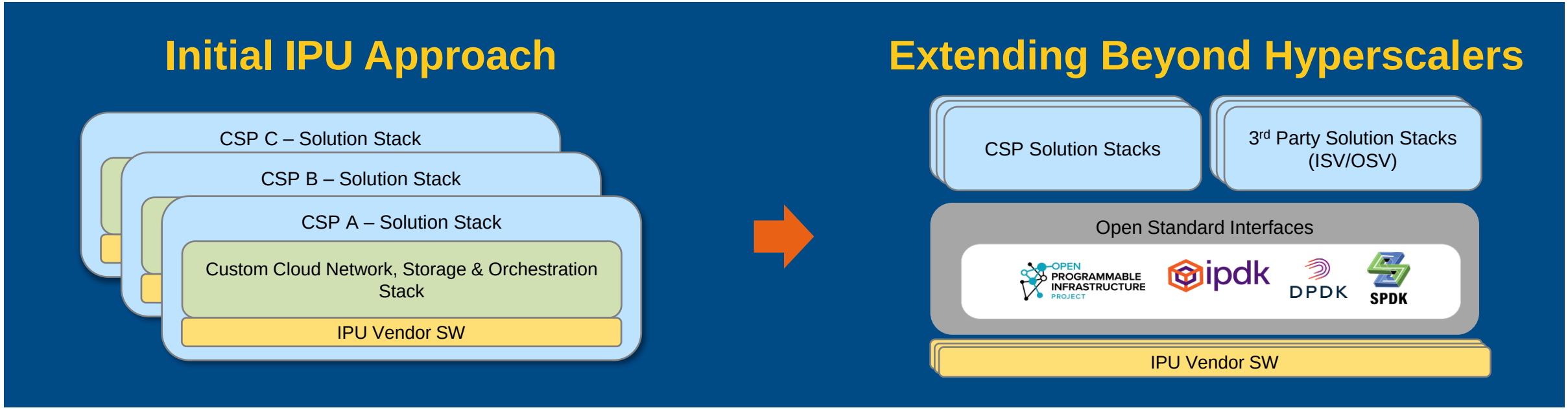
Programmability

- CSPs invested in IPUs
  - Unprecedented perf/watt, real-time acceleration and offload, on-the-fly feature programmability
  - Secure, customized services
- Intel IPU technology
  - Powers 6 of 8 global hyperscalers
  - Intel and Google co-developed Intel® IPU E2000 series ASIC IPU

Google Cloud Next – Fall 2022

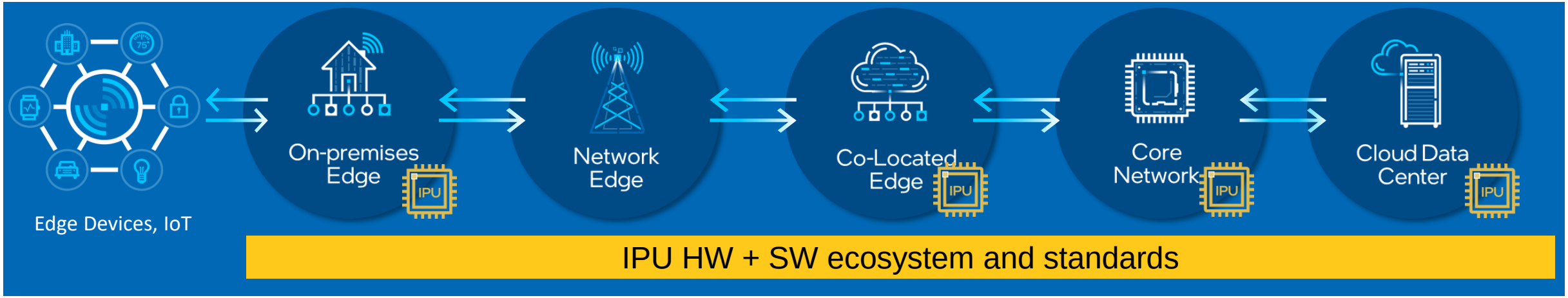


The Benefits of IPU Apply Beyond Hyperscalers



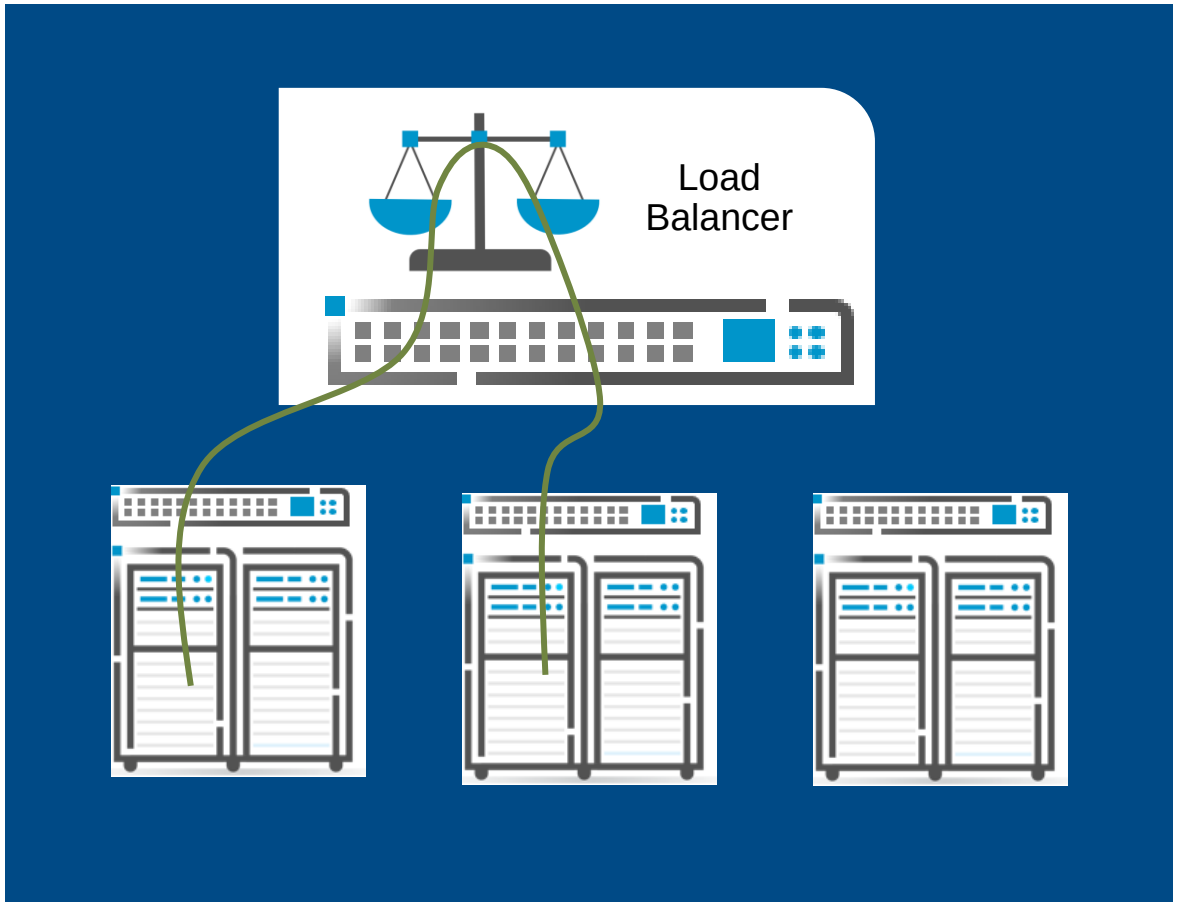
- Smaller operators and datacenters slow to adopt IPU
- They rely on industry standard hardware and commercial or open-source software
- An ecosystem is needed to extend benefits of IPU beyond hyperscalers

Our Vision: IPU from Datacenter to Edge



- Working with industry partners on HW ecosystem
- Building SW ecosystem through open-source initiatives
- Starting with partner-led, commercially available, deployable solutions
- **Goal: easy adoption across new emerging usages**

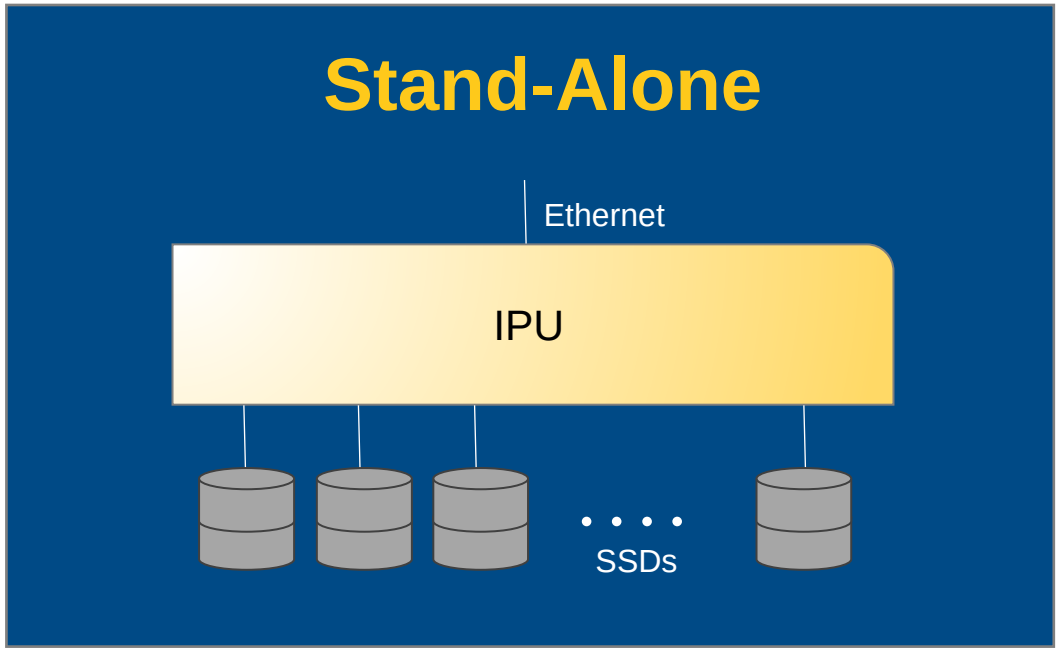
Datacenter Usage Example: Smart Switches



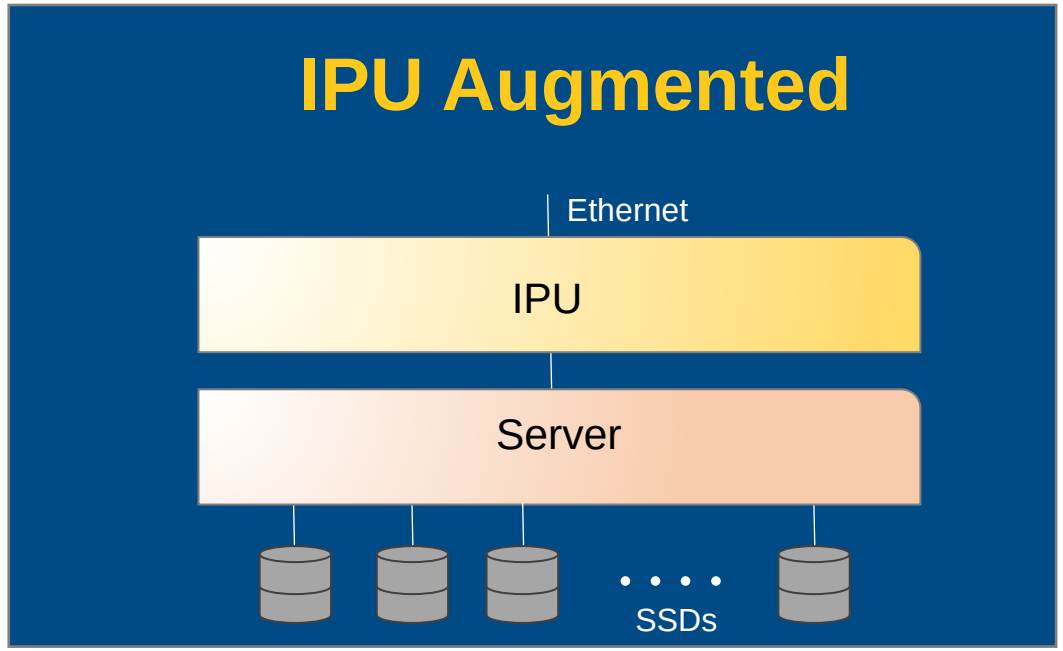
Enterprise and telco can take advantage of infrastructure offload:

- Significant increase in performance at lower power/cost
- Reduced network traffic
- Overall lower TCO

Datacenter Usage Example: Storage Target Appliances

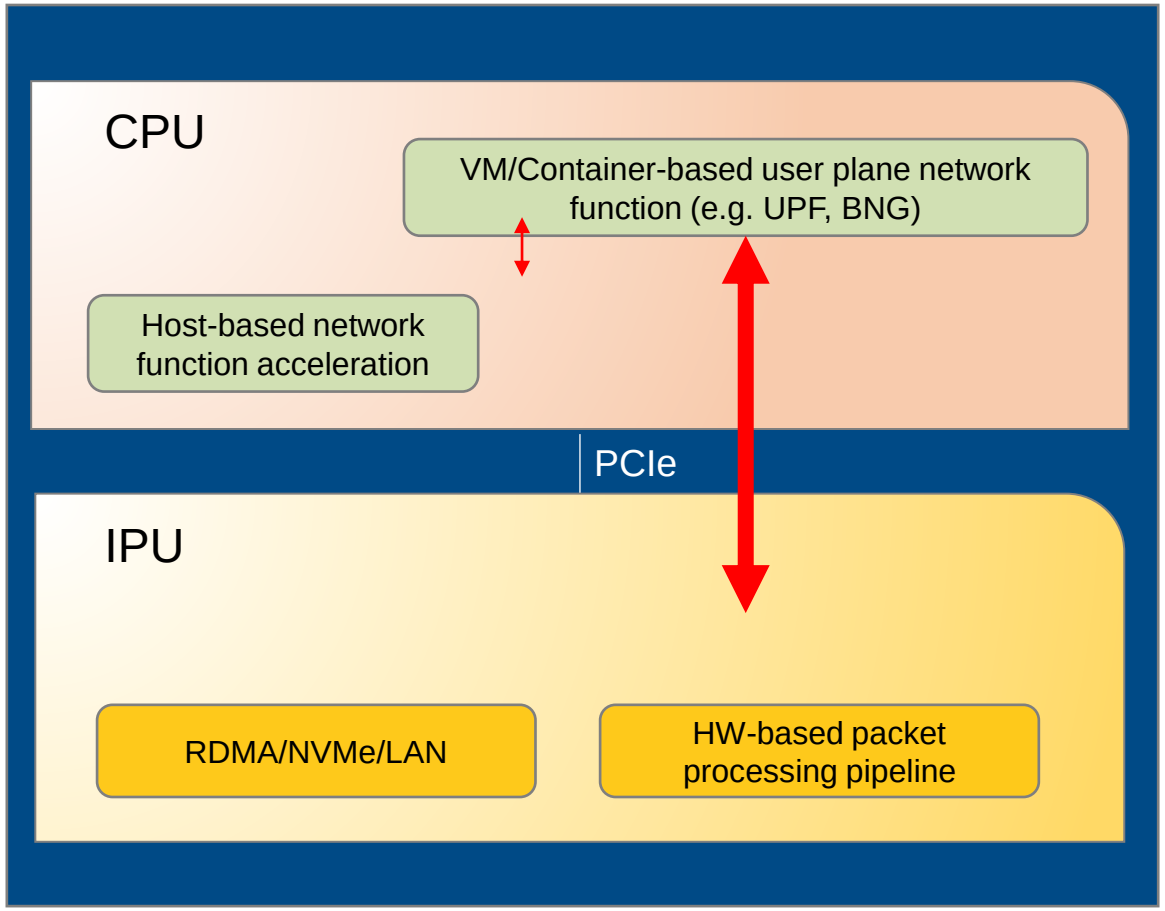


- Storage data path acceleration
- Reduced system power and cost for smaller target storage applications



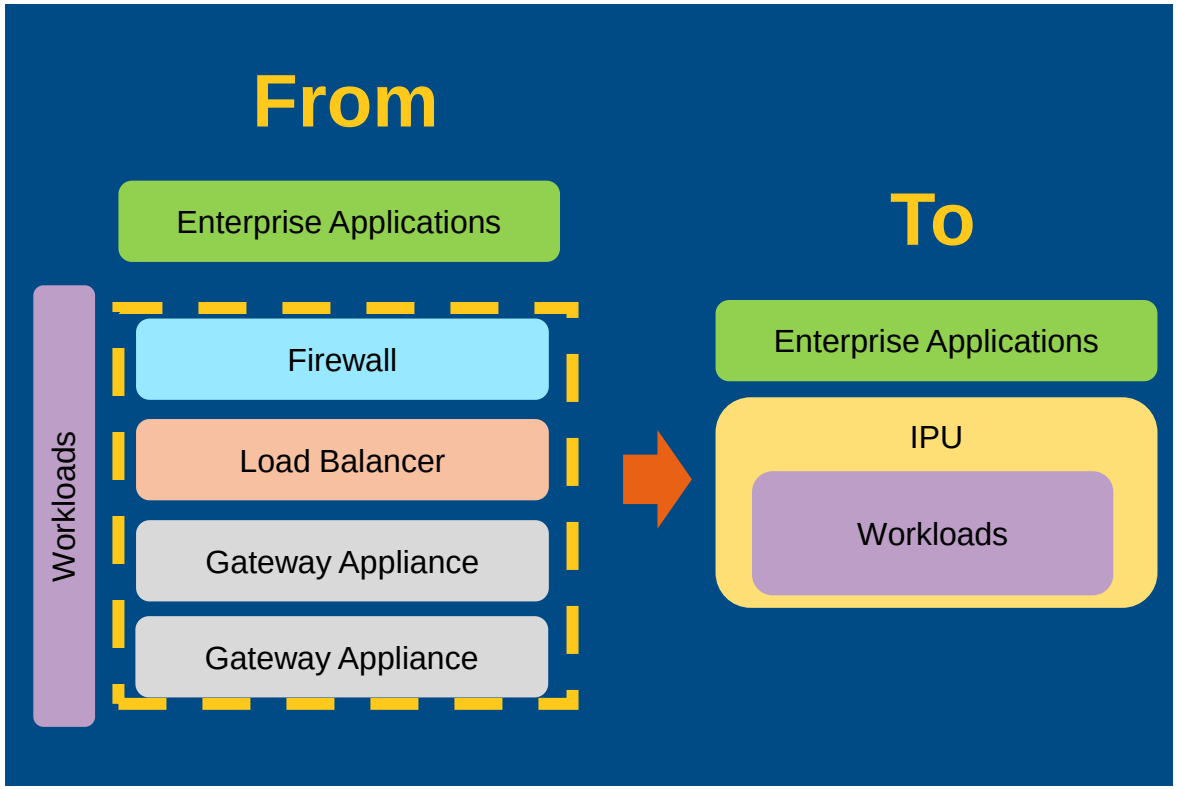
- Storage data path acceleration
- Improves storage server efficiency with integrated accelerators and advanced network technology

Edge Usage: Telco Workloads



- Optimize deployments by offloading infrastructure functions
- Reduce CapEx for dedicated site network equipment by consolidation into IPU
- Provide secure isolation and traffic separation of tenant applications
- Smaller footprint + performant solution = lower TCO

Edge Usage Example: On-Premise Enterprise



Infrastructure remotely maintained, provisioned locally, secure within IPU rather than dedicated machine

- Support gateway requirements while isolating traffic
- Fewer boxes, lower power
- Improves TCO

The Evolution of Infrastructure is Now

- IPU transforms datacenter architecture
- New, innovative use cases edge to cloud
- Intel partnering across ecosystem to bring easily deployable IPUs to broad market
- Driving open-source software and industry standards for IPU
- Join the innovation!

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