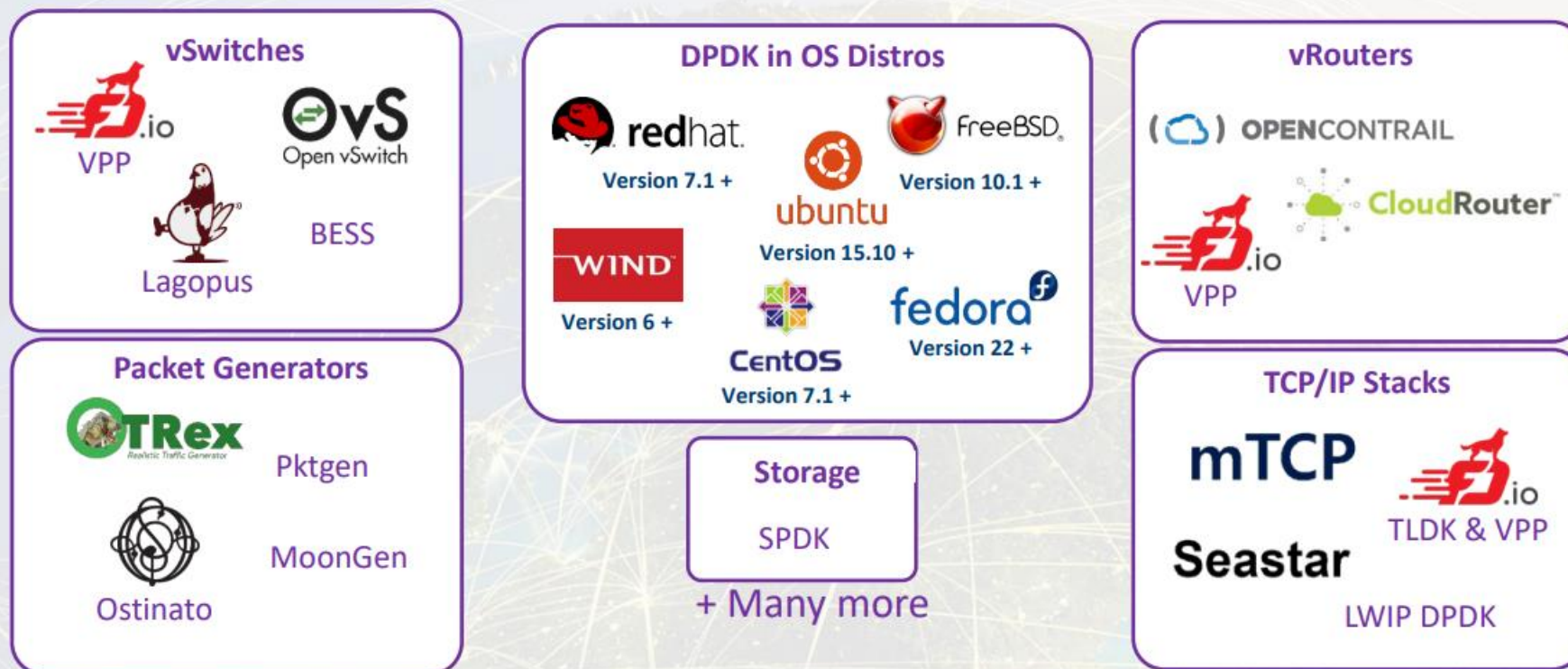# DPDK

Team Emertxe

EMERTXE

Topics

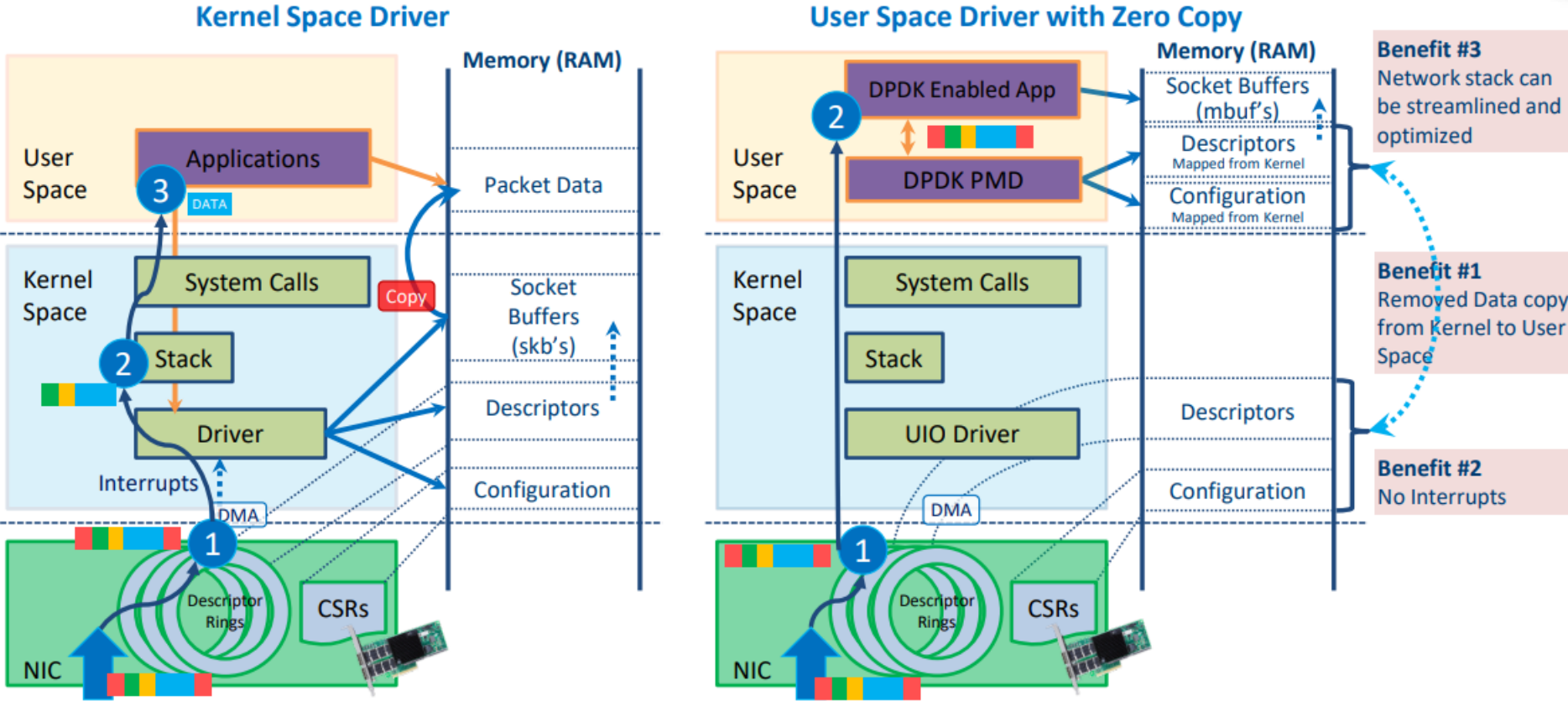- DPDK Hands-on

- How to build VPP

- Intro to VPP

EMERTXE

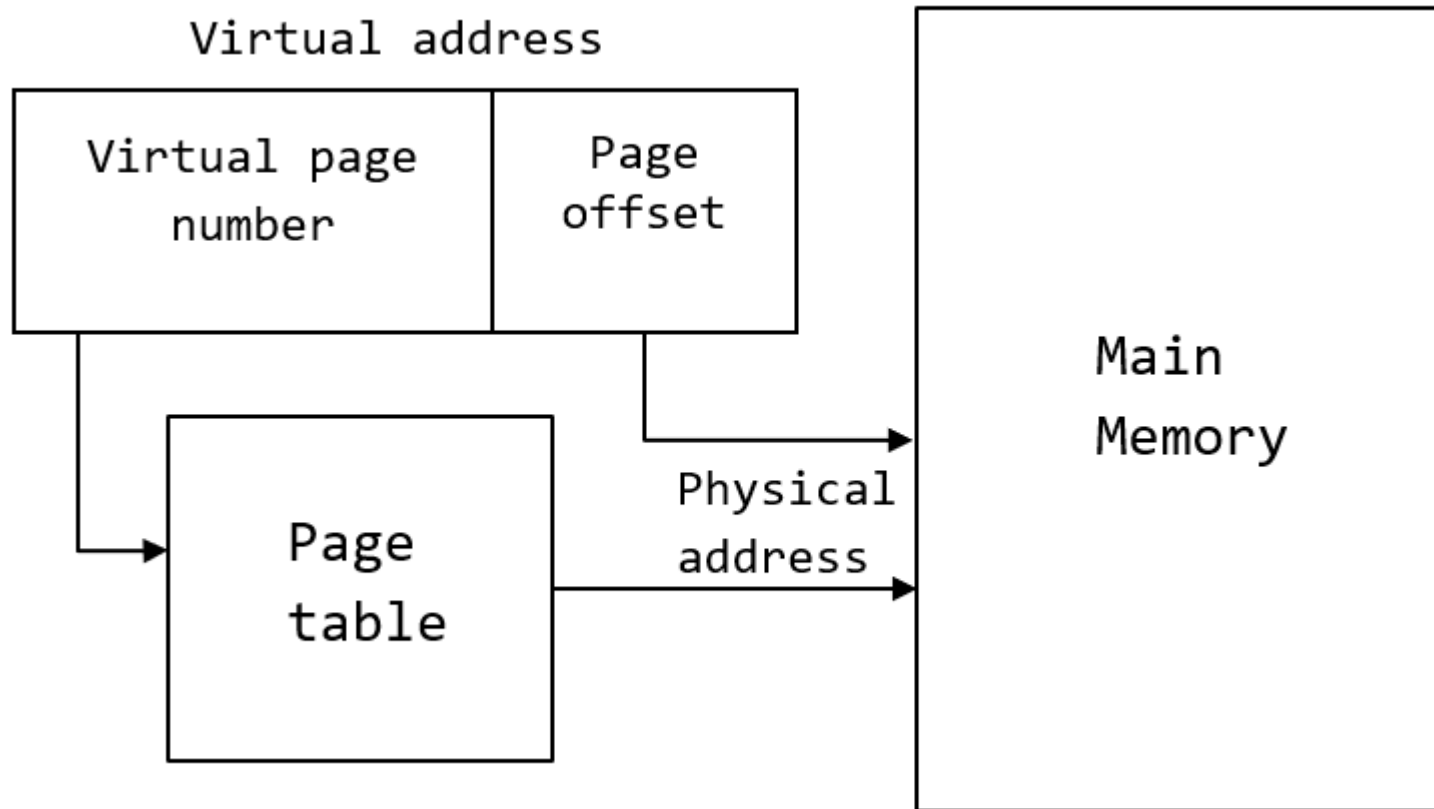# DPDK
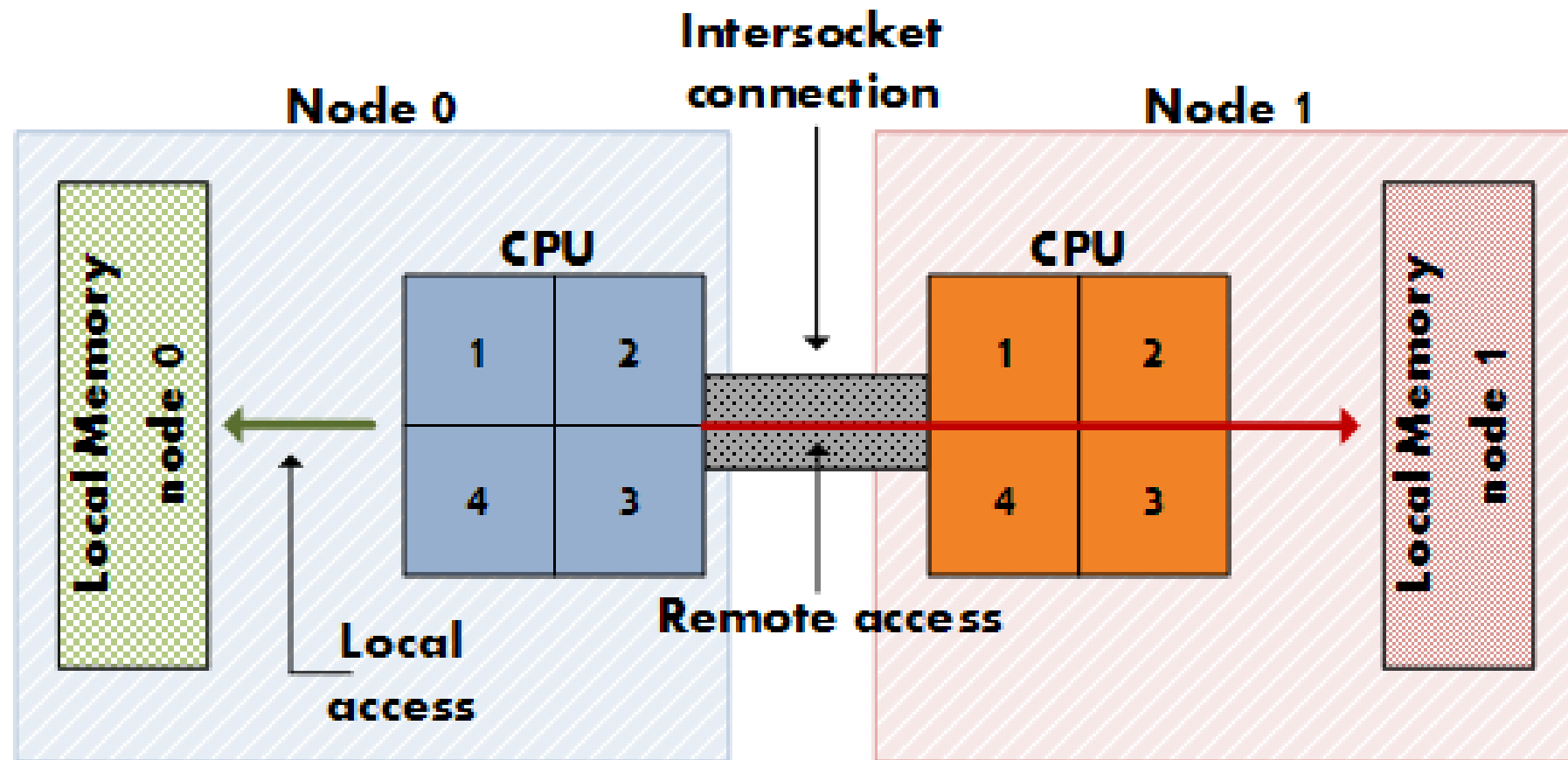
DPDK

Packet Processing Kernel vs. User Space
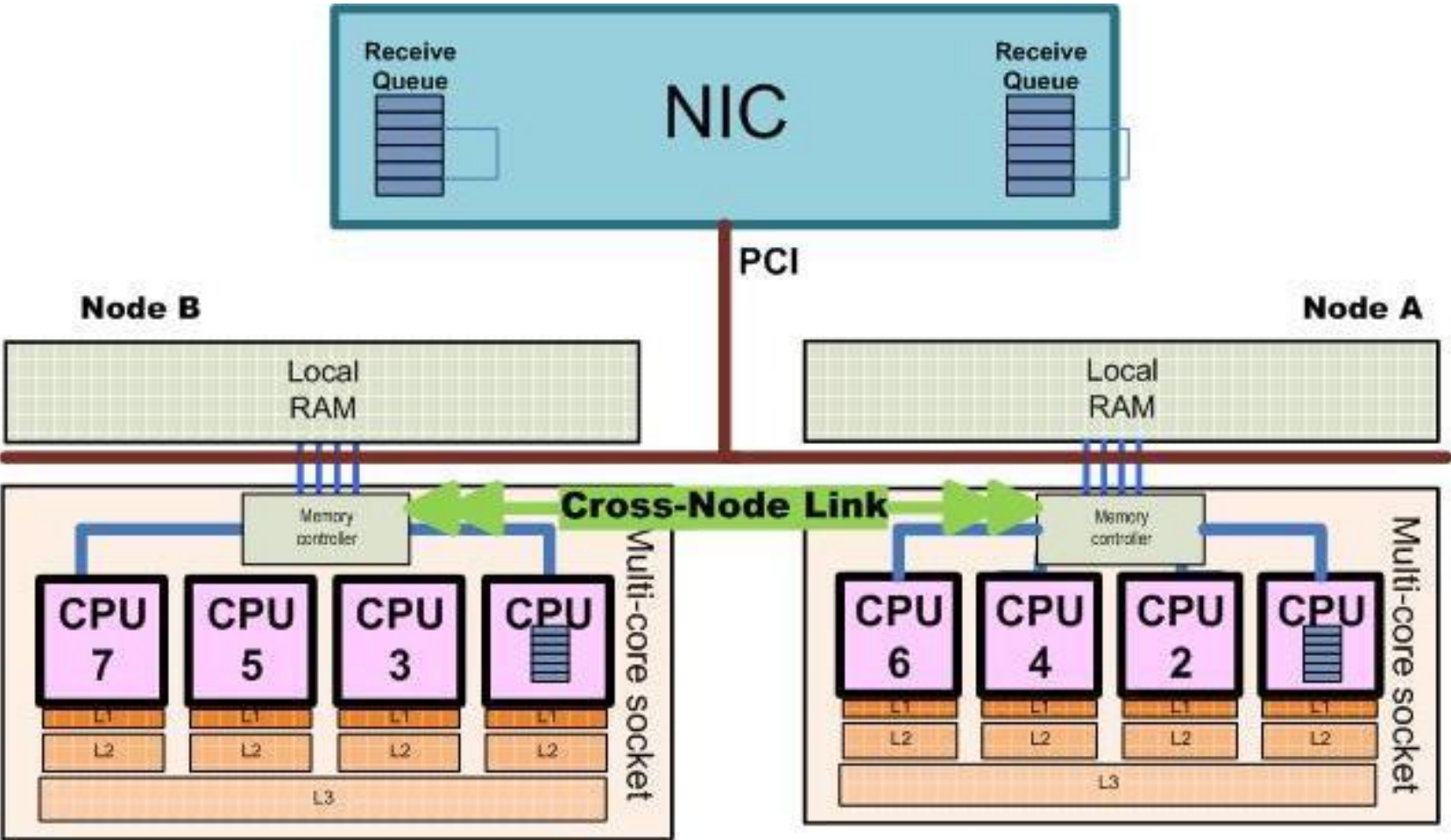
DPDK

Why we need huge pages support

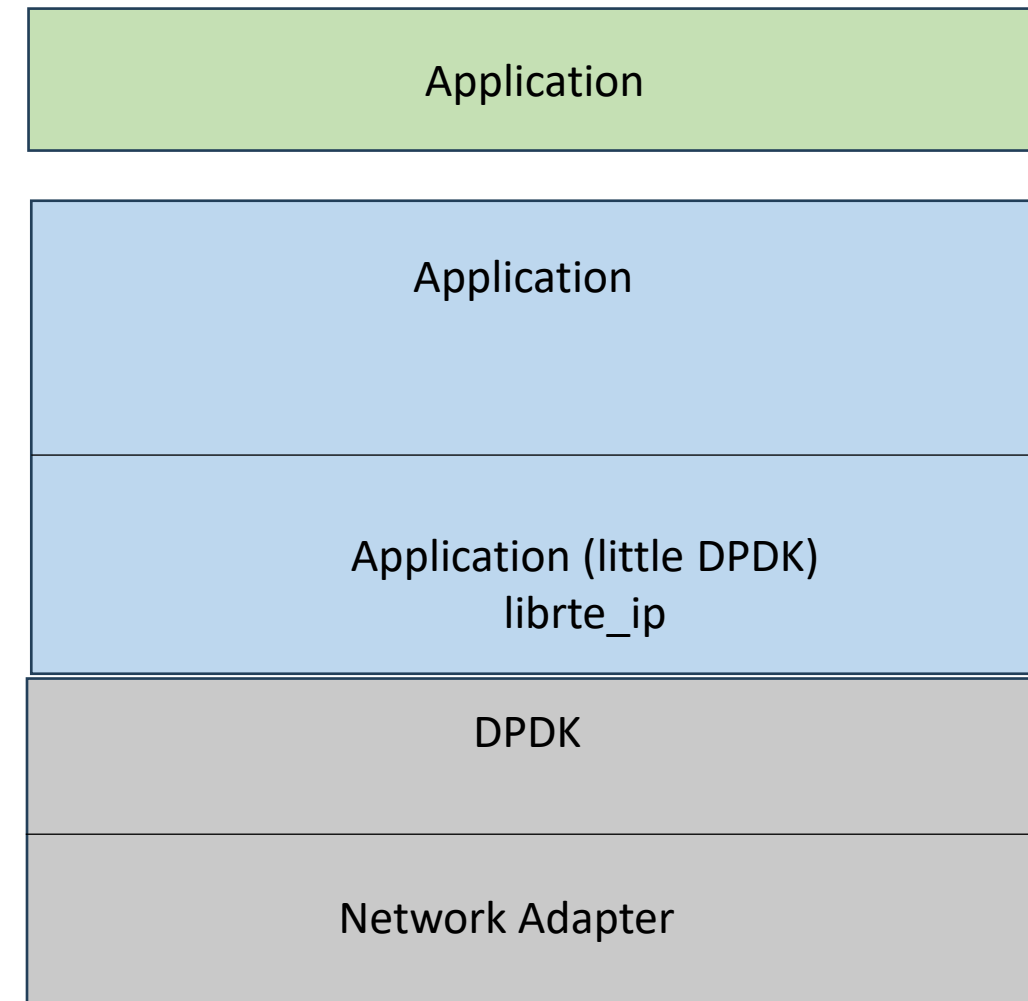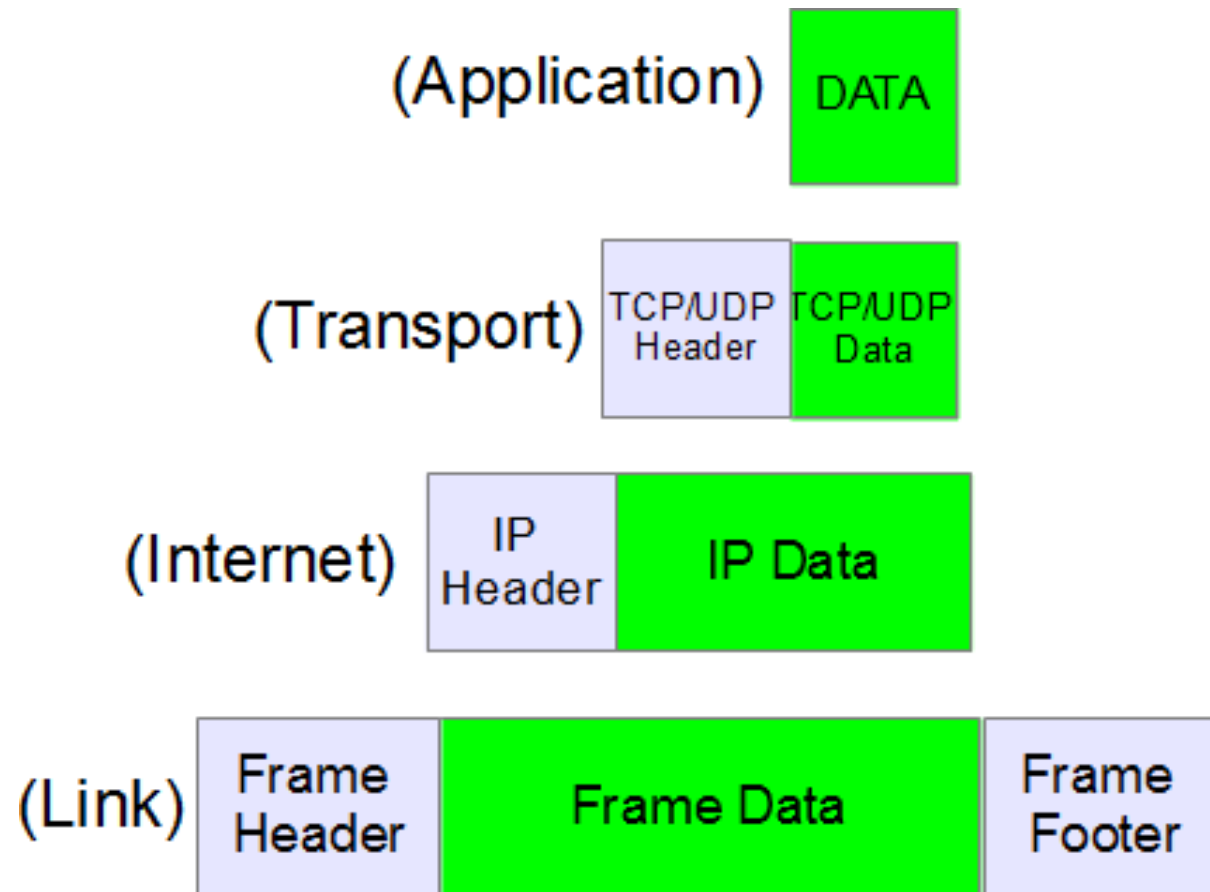$sudo echo 64 > /sys/devices/system/node/node0/hugepages/hugepages-2048kB/nr_hugepages

DPDK

DPDK

DPDK

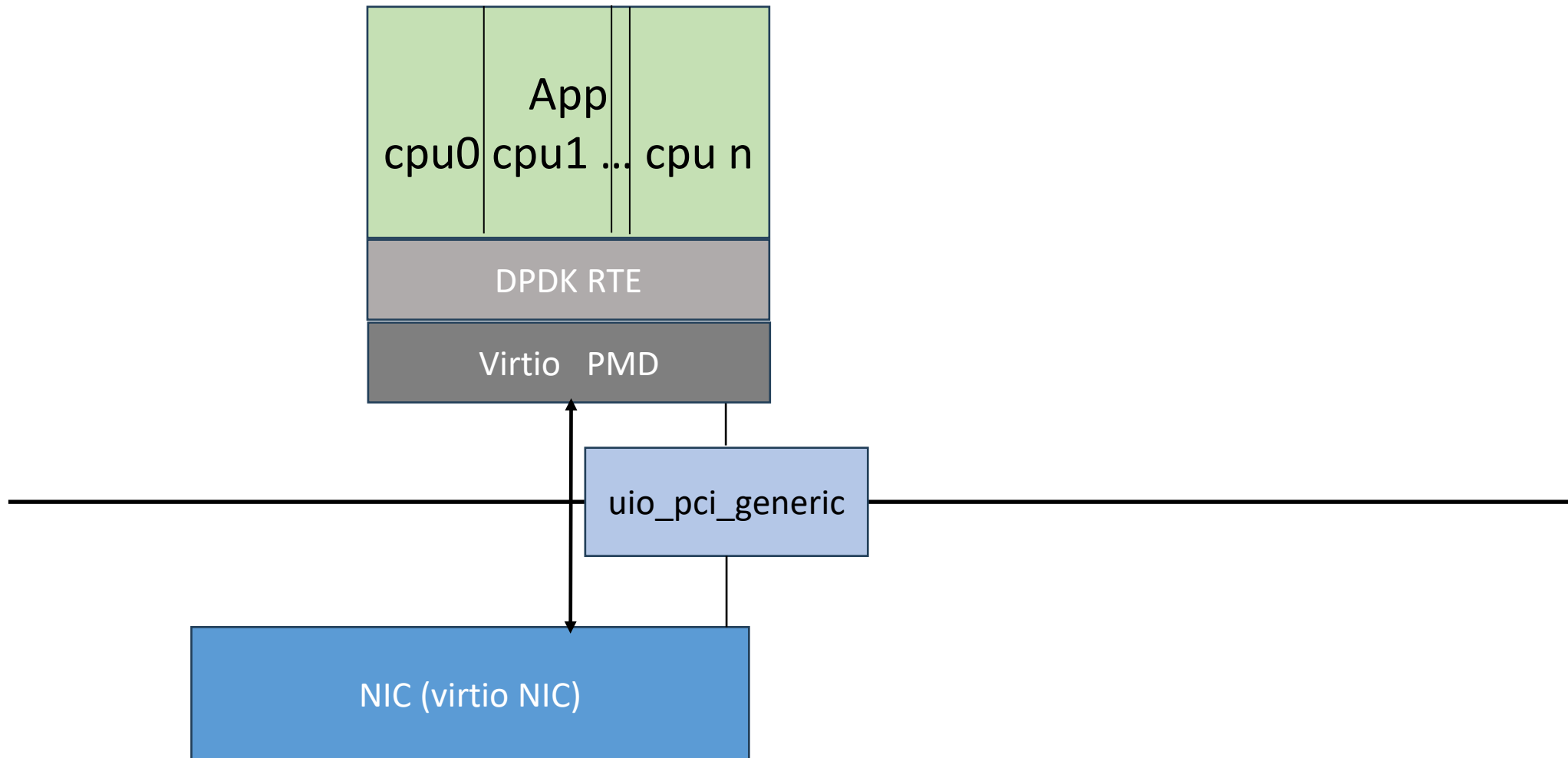|	
(Application)	DATA
(Transport)	TCP/UDP Header / TCP/UDP Data
(Internet)	IP Header / IP Data
(Link)	Frame Header / Frame Data / Frame Footer

Application
Application
Application (little DPDK) librte_ip
DPDK
Network Adapter

DPDK

App
(VPP, Seastar, OVS, dpdk-l2fwd, dpdk-helloworld & etc)

DPDK RTE

Virtio   PMD

uio_pci_generic

NIC (virtio NIC)

rte_eth_dev_configure()
rte_eth_rx_queue_setup()
rte_eth_dev_start()
rte_eth_tx_buffer_flush()
rte_eth_rx_burst()

DPDK

DPDK: Task

Traffic Generator — dpdk-testpmd — Machine A

NUT (RTE) — dpdk-l2fwd — Machine B
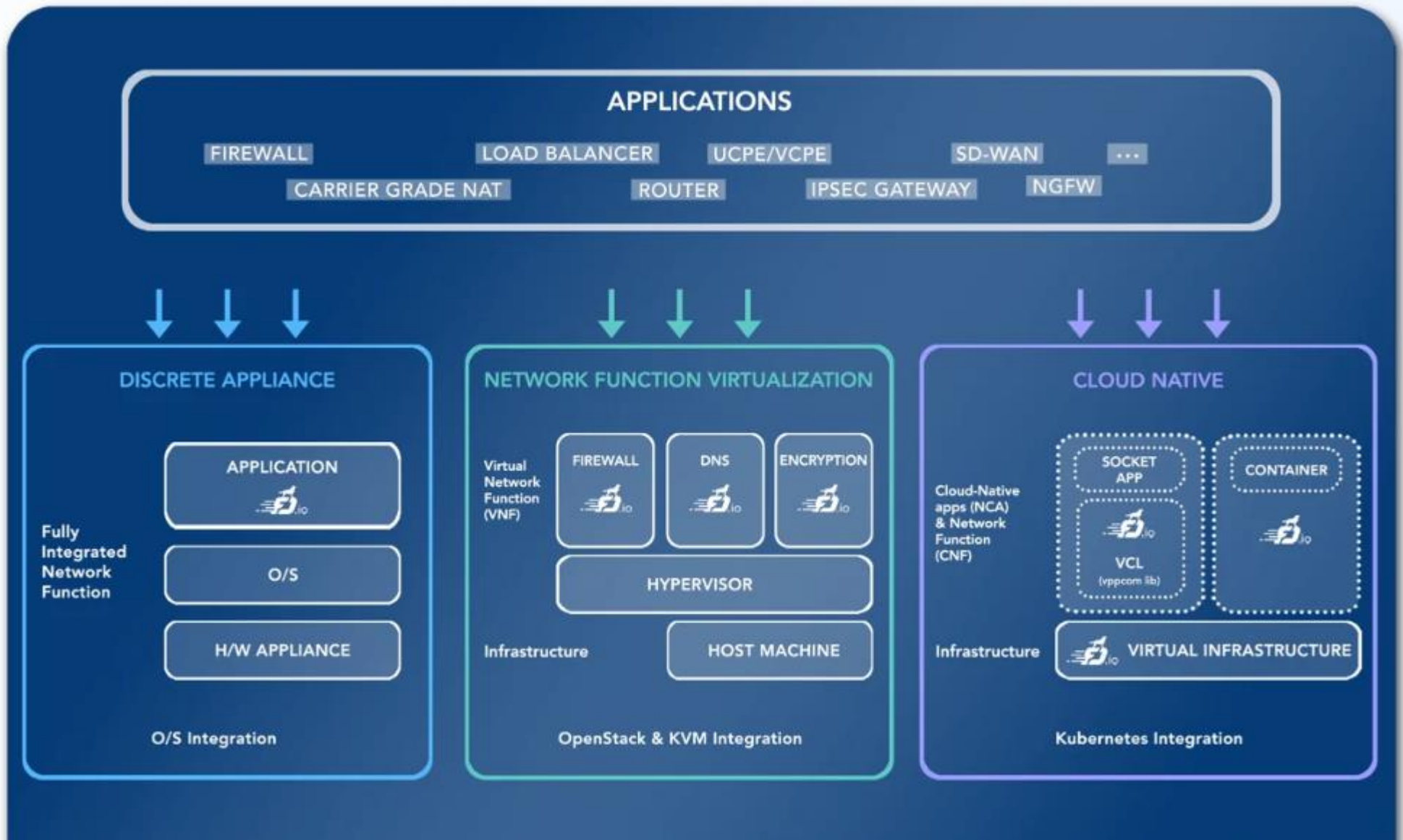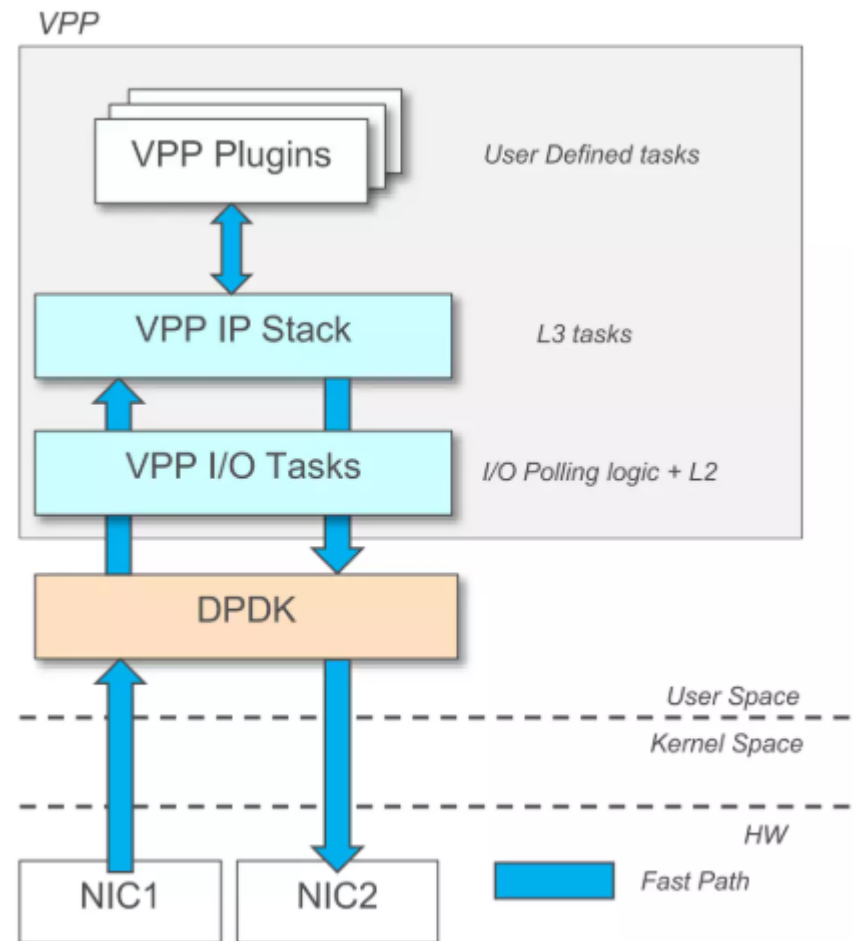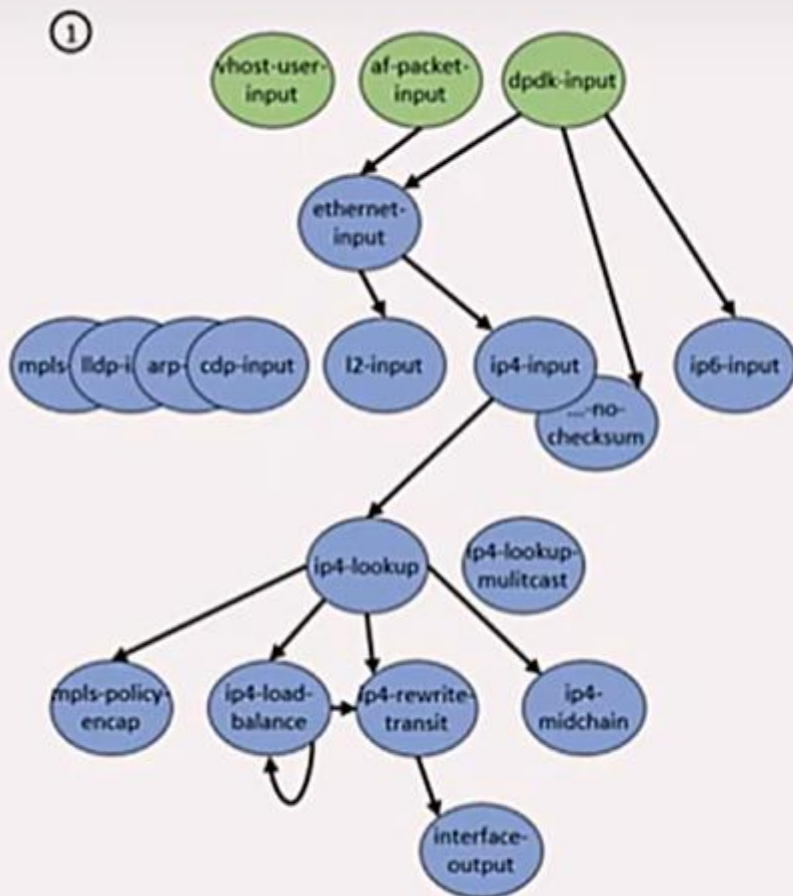
DPDK & VPP

Why VPP

1. High-Performance Networking

2. Software Defined Networking (SDN)

3. Virtualized Network Functions (VNFs)

4. Optimized for Multi-Core Processors

5. Packet Forwarding and Routing

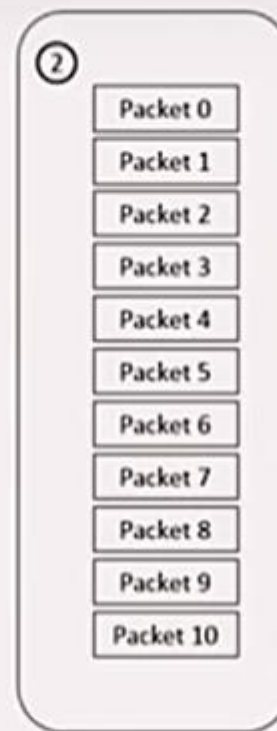6. Packet Capture and Analysis

7. Load Balancing
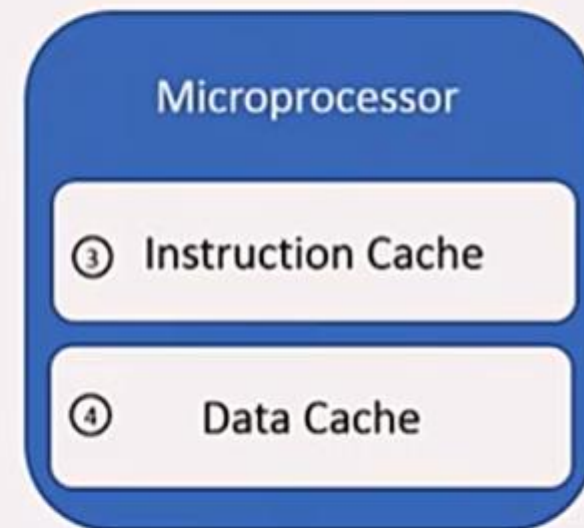
VPP

VPP

How does it work?

① Packet processing is decomposed into a directed graph node ...

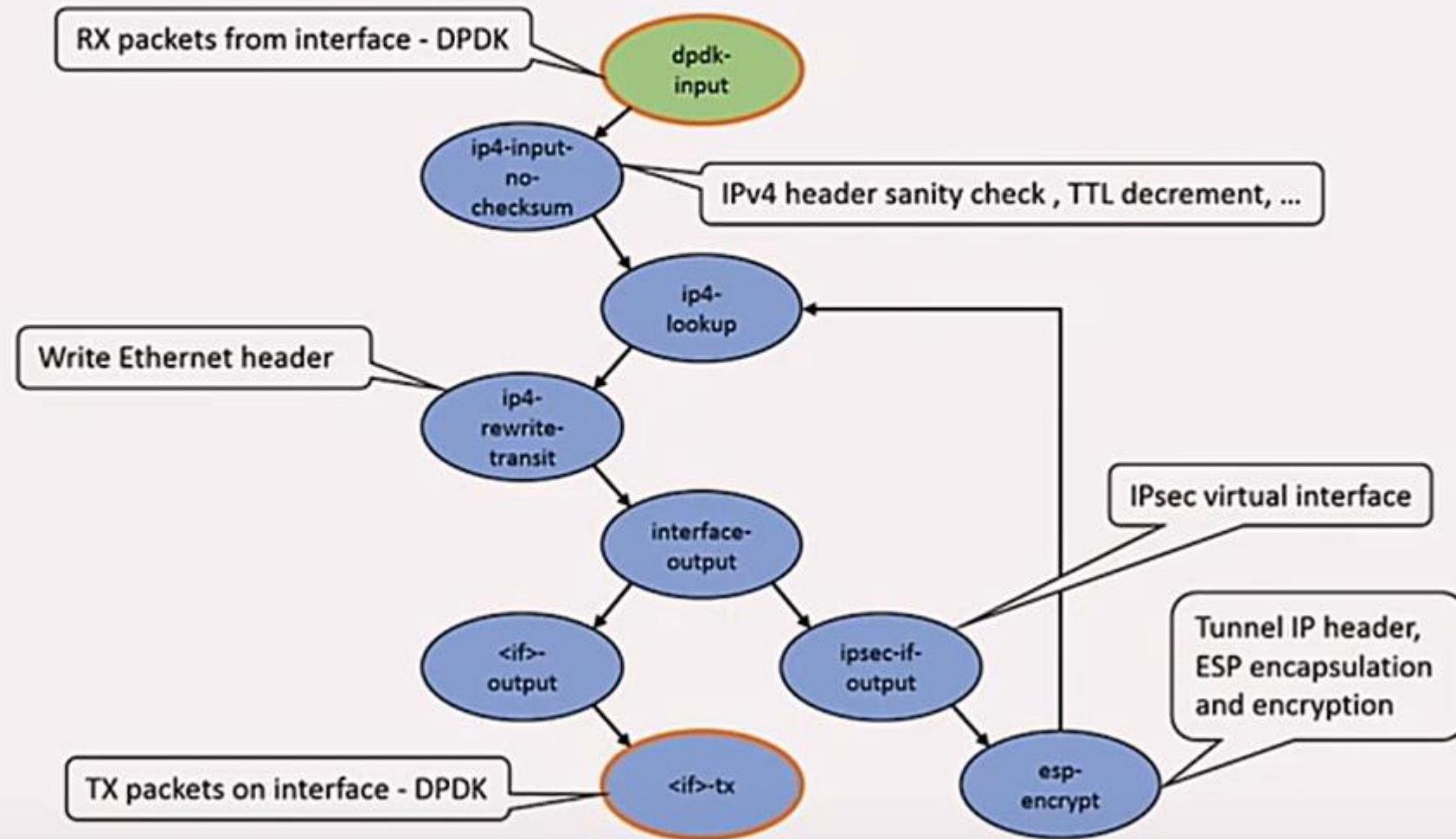② ... packets moved through graph nodes in vector ...

③ ... graph nodes are optimized to fit inside the instruction cache ...

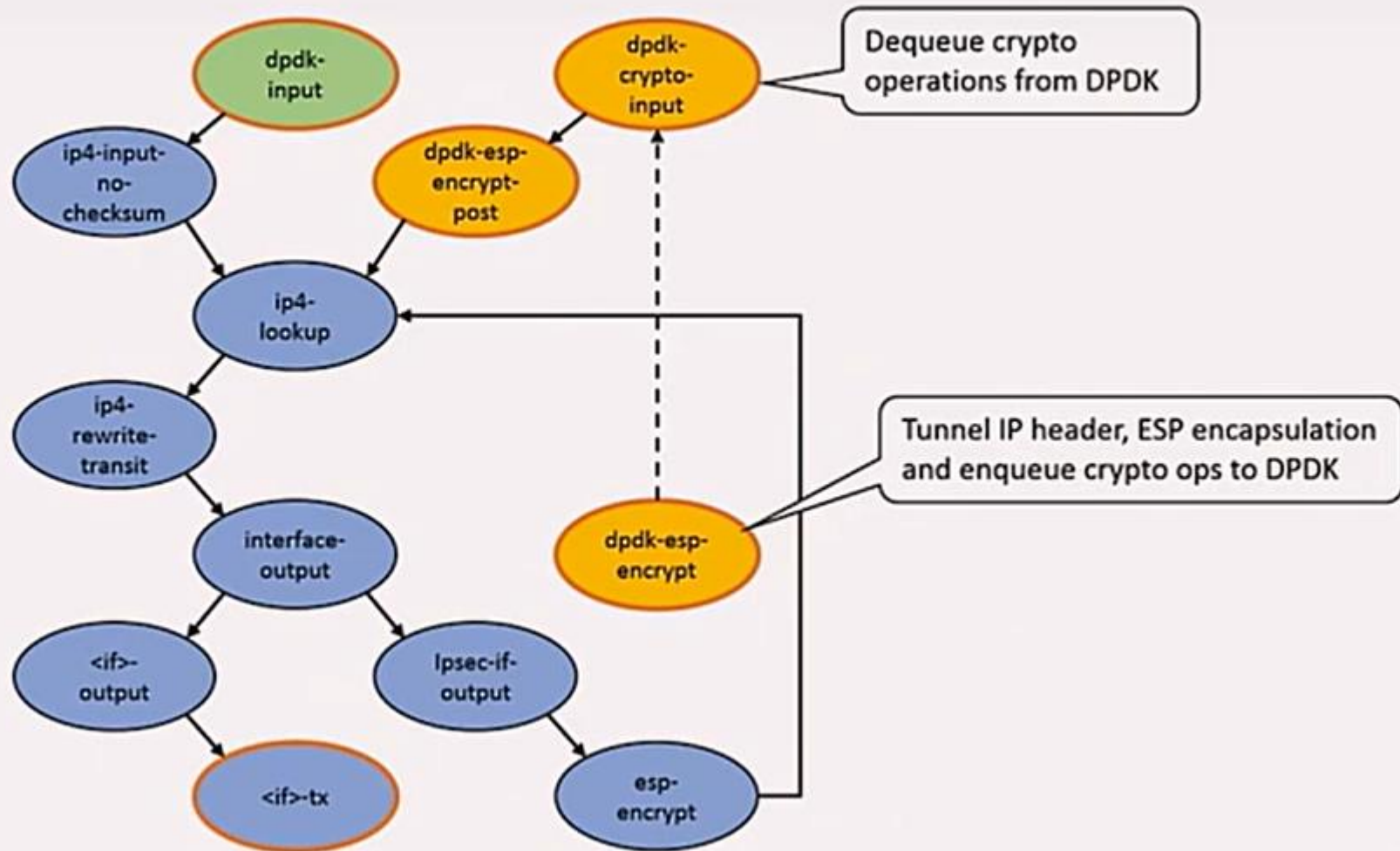④ ... packets are pre-fetched, into the data cache ...

VPP

Adding Nodes

VPP

VPP usage

Kubernetes CNI Plugin with a VPP Dataplane