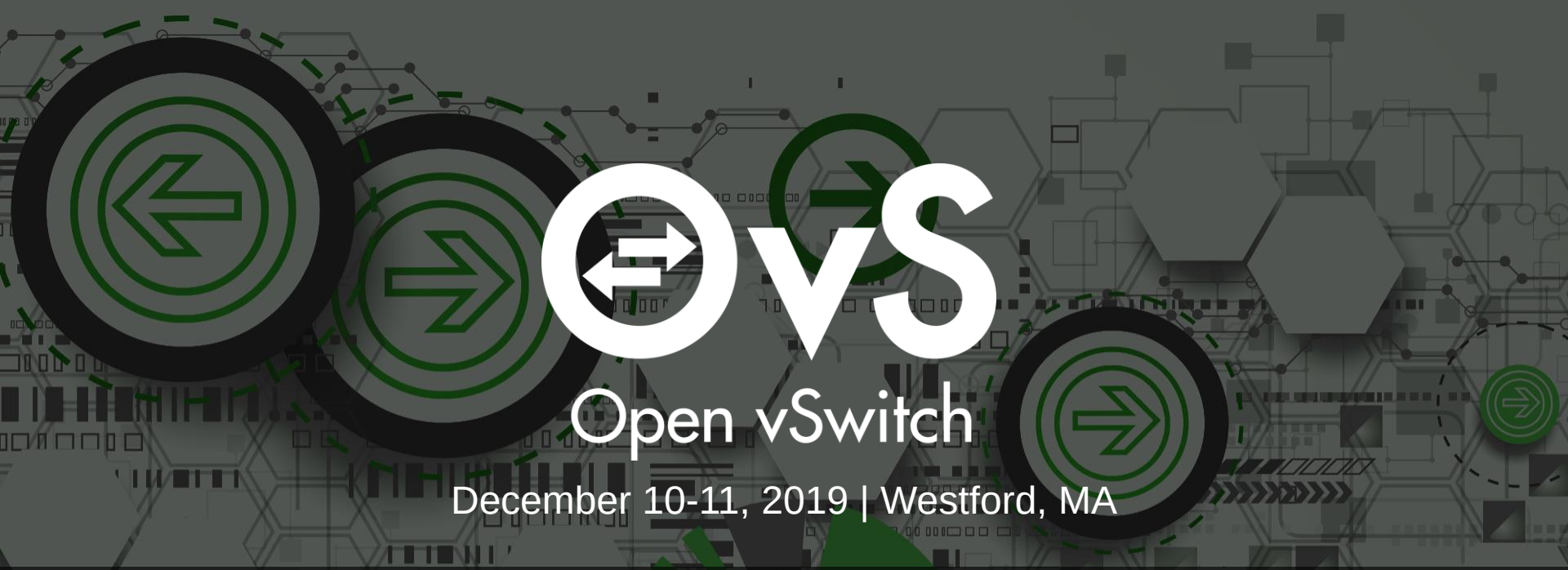

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Utilizing DPDK Virtual Devices in OVS

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Intel

DPDK Virtual Devices Introduction

❑ **Virtual Devices for Exceptional Path**

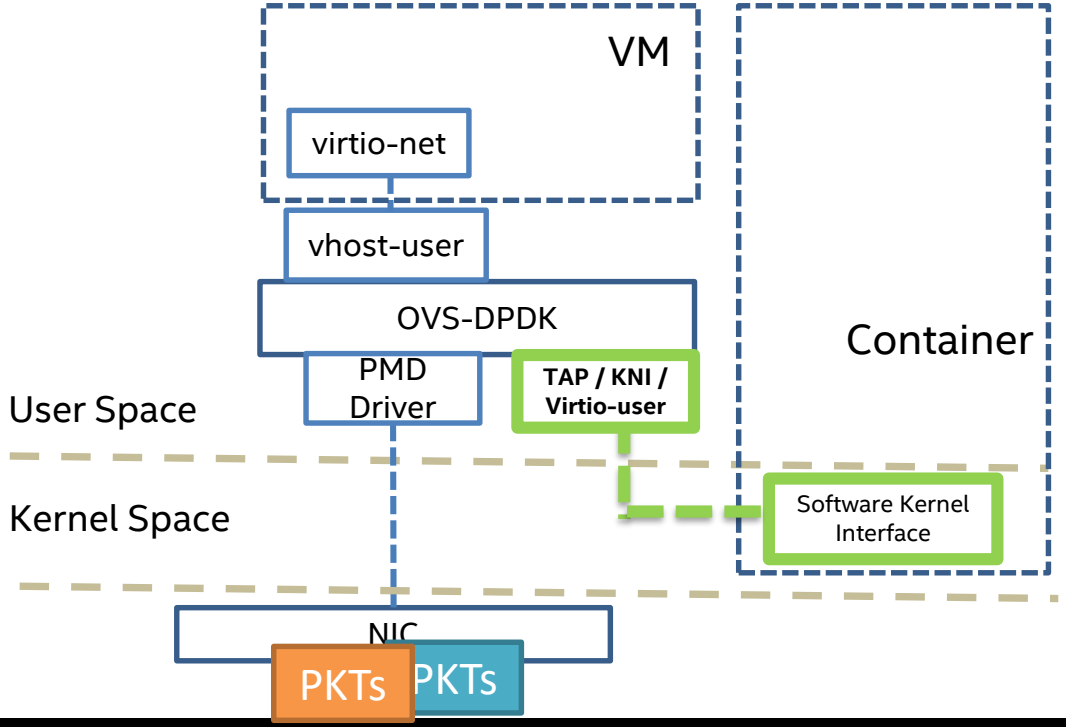
- TAP
- KNI
- Virtio-user

❑ **Virtual Devices Based on NIC in Kernel**

- PCAP
- AF_PACKET
- AF_XDP

Virtual Devices for Exceptional Path

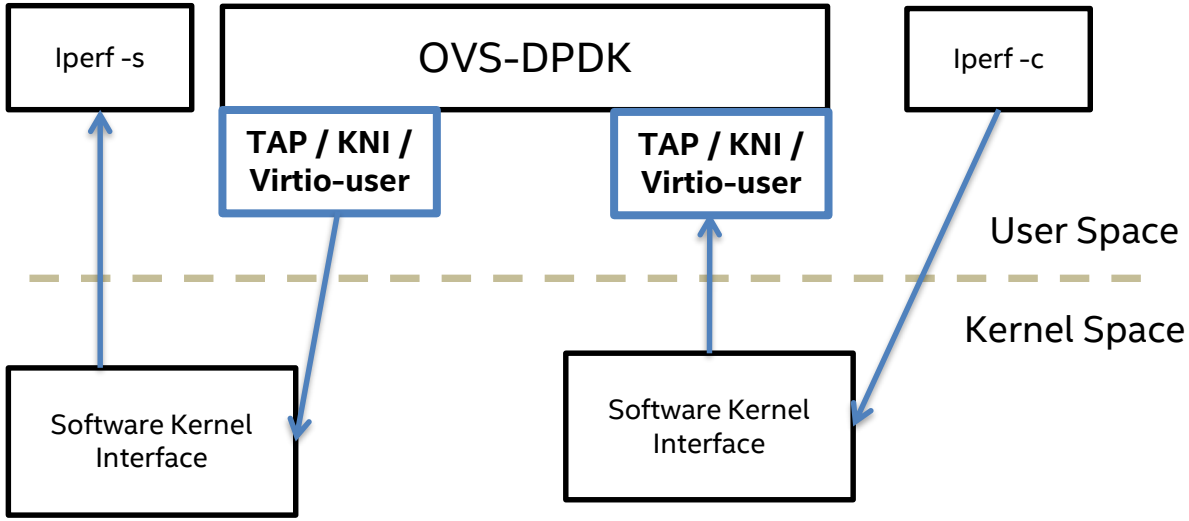
❑ TAP / KNI / Virtio-user

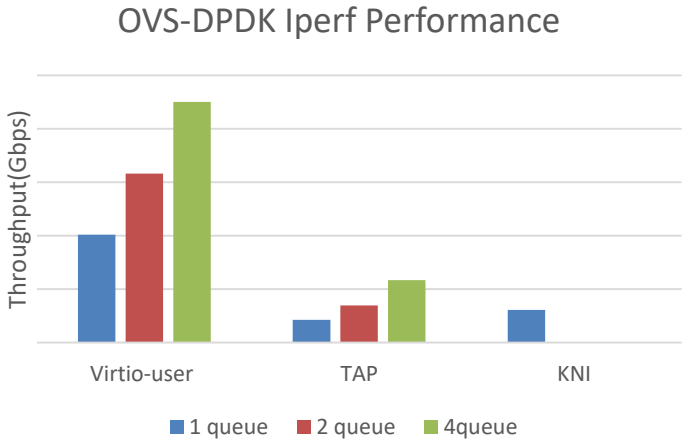


Potential usage in OVS-DPDK scenario:
Container network.

Virtual Devices for Exceptional Path

- Single Host Iperf Performance in OVS-DPDK





	Multi-queues
TAP	Y
KNI	N
Virtio-user	Y

Virtual Devices for Exceptional Path

BKMs on supporting three VDEVs in OVS-DPDK:

TAP:

Normally, OVS-DPDK calculate Tx queue number according total port numbers.
TAP device require (rxq number = txq number).

KNI:

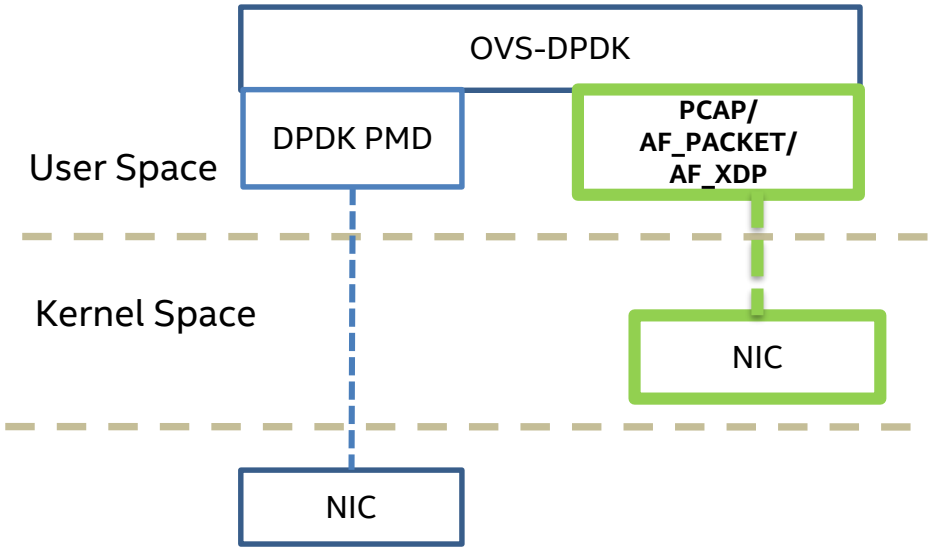
Launch OVS-DPDK with KNI, KNI's MTU is **2034** by default .
KNI_MTU= (mbuf_size) - RTE_ETHER_HDR_LEN
Need re-config the MTU for KNI interface in kernel side for better usage.

Virtio-user:

1G hugepage	*ok*
2M hugepage	*ovs-vsctl --no-wait set Open_vSwitch . other_config:dpdk- extra="--single-file-segments"*
4K page	*System request: VT-d on; NIC bind to vfio-pci ;* *ovs-vsctl --no-wait set Open_vSwitch . other_config:dpdk- extra="--no-huge"*

Virtual Devices Based on NIC in Kernel

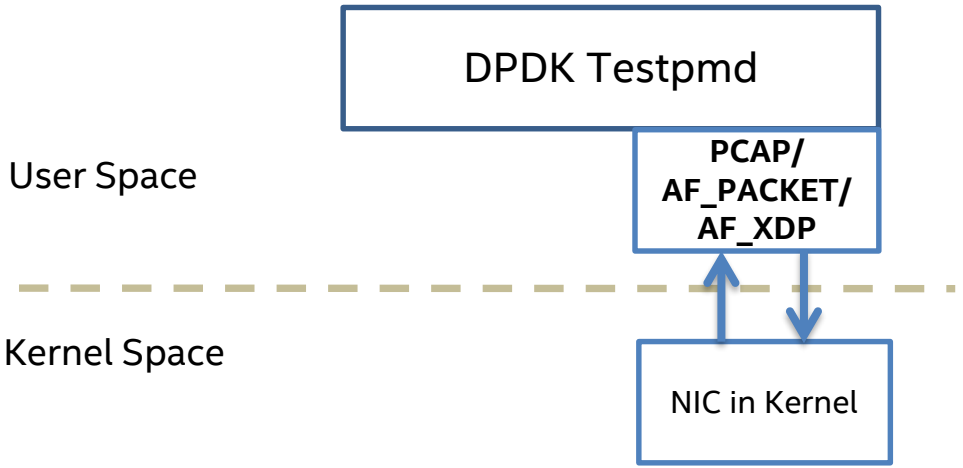
- **PCAP/ AF_PACKET/ AF_XDP**

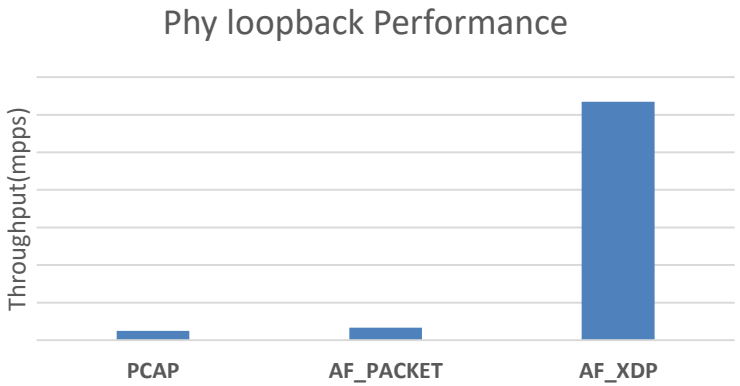


Potential usage of these VDEVs in OVS-DPDK scenario:
Receive packets from kernel NIC to user space w/o nic-pmd.

Virtual Devices Based on NIC in Kernel

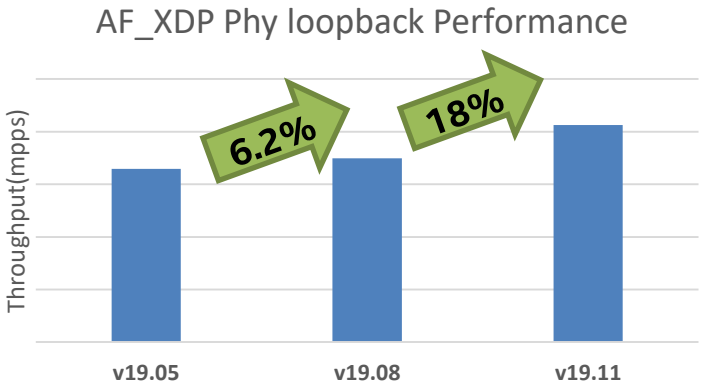
- **PCAP/ AF_PACKET/ AF_XDP Phy loopback Performance**





Virtual Devices Based on NIC in Kernel

☐ AF_XDP performance gains in DPDK



Two tips for using AF_XDP in OVS-DPDK:

a) AF_XDP has dependencies on kernel version, recommend v5.4, includes some bug fixes
b) ovs-vsctl add-port br1 afxdp -- set Interface afxdp type=dpdk options:dpdk-devargs=net_af_xdp0,iface=[interface name], start_queue=[x],queue_count=[x]

Thank You!