



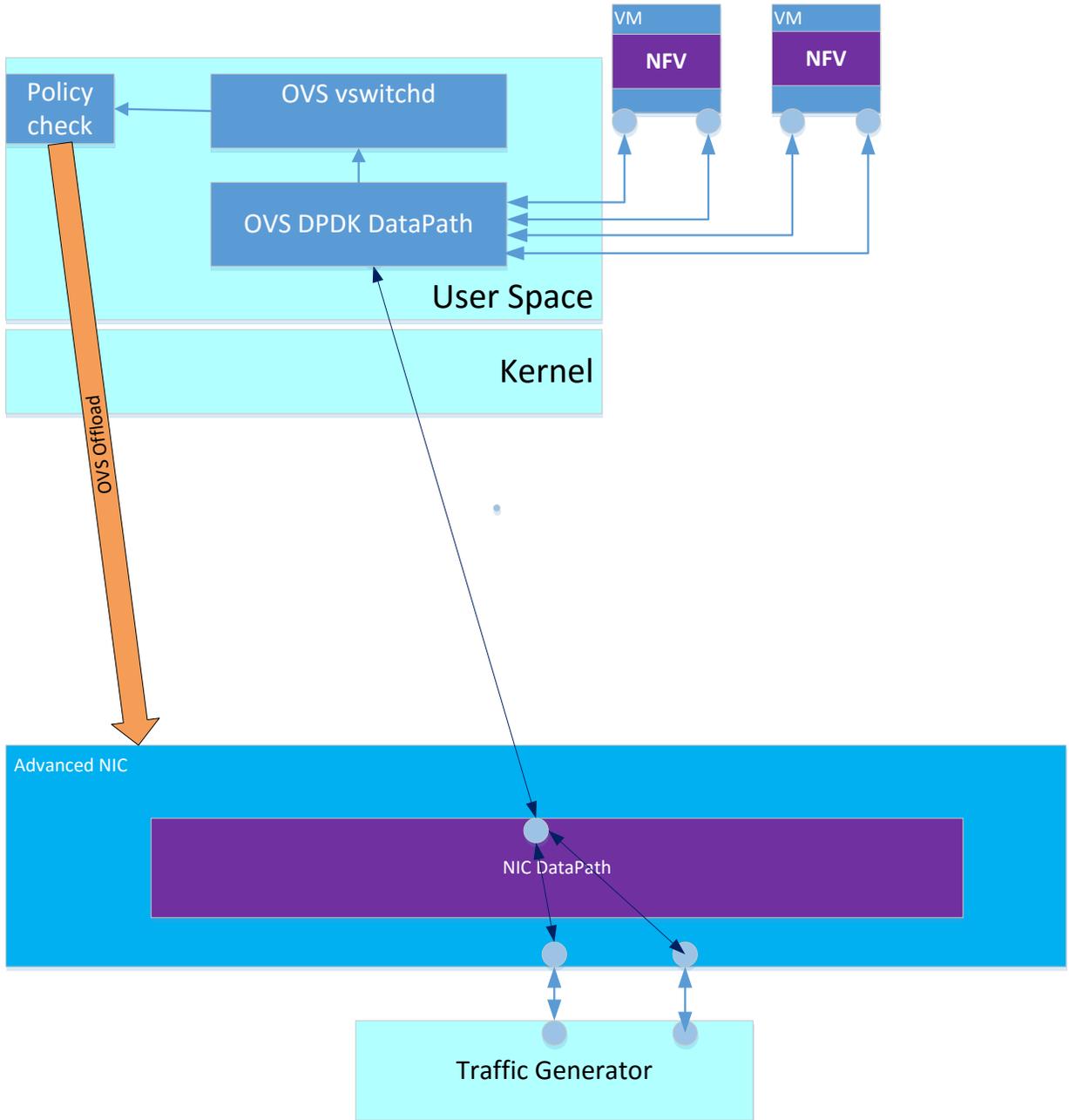
Flow Classification Open Virtual Switch (OVS) Offload

Abstract:

Today's Carrier Ethernet architecture is undergoing the biggest transformation since the beginning of the internet. Video, mobile and cloud usage is driving huge growth in traffic while the constantly changing traffic patterns requires ability to introduce new services quickly. This led the creation of Networking Function Virtualization (NFV), which defines the specifications for Virtualized Network Function (VNF).

VNF is a software implementation of a network function such as routing or firewall. Each such VNF runs in a virtual machine (VM). The VMs are created in a compute blade or in a high scale server – unusually called the host device. The VMs are located on top of the host's Hypervisor that uses Open Virtual Switch (OVS) to switch the data traffic to/from each VM/NFV and also to chain the traffic between them.

OVS is an OpenFlow switch and so the traffic switching is controlled by programming flows to its data plane engine. The flow determines the packet classification that will be done by the OVS data plane once a packet arrives. This classification is an expensive CPU operation since can involve hash table searches. Offloading part of the classification to an advanced NIC that will perform this operation in HW can improve significantly overall OVS performance.





Goals:

- Based on OVS -DPDK – using Mellanox DPDK API
- Add a module to the OVS user space in which for every flow that is about to be inserted to the DPDK datapath, a call to a specific "policy" module will be made to decide whether a flow classification offload using action tag (report ID) can be done.
- If offload can be done, then the classification flow with action tag will be offloaded to HW and in parallel a special flow with Tag ID will be written to OVS datapath.
- The research should present OVS performance with vs without offload of different flow classification depth.
- Optional additional offloads that can be done in this manner: Push/Pop tag actions, and rate limit actions.

Requirements:

Internet Networking Course

Guided by:

