OVS OFFLOAD

Xilinx Alveo powers OVS OFFLOAD

SOLUTION BRIEF

XILINX® ALVEO™

INTRODUCTION

Open vSwitch (OVS) Offload application implemented on Xilinx® Alveo™ Data Center Accelerator cards allows virtual) machines (VMs to communicate with each other in the external world.

The OVS software based solutions are not only CPU intensive which affects the system performance but also prevents full utilization of the available bandwidth. By offloading the full packet processing functionality to the Xilinx Alveo platform, users can save CPU core and improve packet processing performance.

KEY BENEFITS

- Line rate throughput up to 100G
- Kernel flow table offload
- P4 Based parsing (a context for Match-Action definitions)
- SR-IOV with DPDK Drivers (no additional drivers required)
- Offers ideal platform for acceleration of NFV based networks
- Openflow controller support
- Fastpath forwarding of traffic between specified vSwitch vPorts

- Offloads the OVS data plane to FPGA
- Improve OVS performance by 4x
- Save CPU by offloading the tasks
- Carrier SDN and NFV appliances
- Approximately 35-40% FPGA Utilization on Alveo U200

SOLUTION OVERVIEW

OVS Offload is a 100/50/25G solution which improves performance and efficiency by offloading the switching activities to the Xilinx Alveo platform.

- Offload OVS data path
- Acceleration via Exact Match Flow Cache
- OVSDB (configuration)
- Open Flow protocol support
- TC-Flower support
- Optional Local Flow API
- VXLAN Tunnel Support
- Stand-alone or controller modes
- Data Throughput is addressed by
    - SRIOV-QDMA from Xilinx for VM data transfer
    - 100G CMAC for External data traffic

XILINX®

Adaptable. Intelligent.

OVS OFFLOAD

## Xilinx Alveo powers OVS OFFLOAD

SOLUTION DETAILS

- Support for 252 Virtual and 4 physical functions
- Low resource utilization on the U200 allows the implementation of other acceleration functions
- Flexibility with number of table entries for Flow Tables
- SDNet /P4 design flow for packet processing
- ODL carbon support
- 32K exact match table
- Poll mode driver support for DPDK
- 1K Bit length key and action field support
- VXLAN Tunneling support
- OVS statistics support
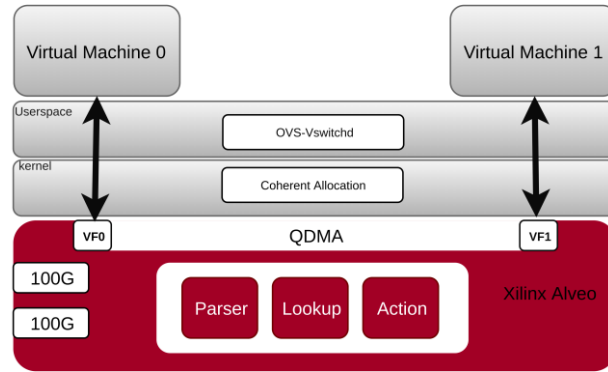
RESULTS

OVS Performance data and CPU Utilization as per packet size

Comparision of DPDK OVS v/s Alveo Offload Solution
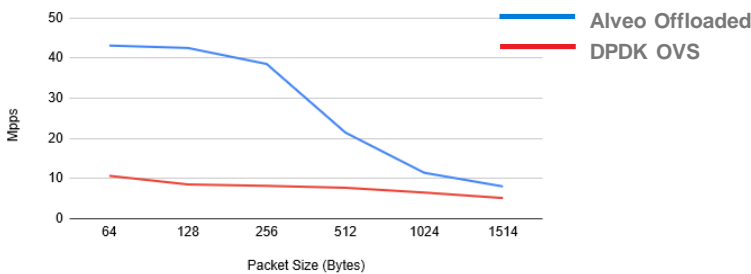
Packet Size	With Alveo OVS Offload		With DPDK OVS	
	Mpps	CPU Utilization (%)	Mpps	CPU Utilization (%)
64	43.1	15.1	10.64	65
128	42.5	15.2	8.49	65.1
256	38.51	15.2	8.14	65
512	21.41	15.2	7.66	65.1
1024	11.4	15.2	6.47	65
1514	7.99	15.2	5.1	65.1

TAKE THE NEXT STEP

Learn more about Xilinx: Alveo accelerator cards
Learn more about Partner: https://www.vvdntech.com/
Reach out to VVDN sales:
Vinod Soman: vinod.soman@vvdntech.com (US Sales)
Nitin Jain: nitin.jain@vvdntech.com (India Sales)

XILINX®

Adaptable. Intelligent.