Network Functions Virtualization

Technical Brief

www.mellanox.com

Cloud-Native NFV Acceleration at Scale

Network Functions Virtualization enables agile service delivery and scalability. Mellanox networking ensures Virtual Network Functions (VNFs) operate with the highest performance, reliability, and efficiency.

Modern Service Providers Require Efficient Virtualization

NFV empowers cloud and communications service providers to replace dedicated and proprietary appliances with virtual machines running on commercial off-the-shelf (COTS) servers. The network must also evolve to support the high rates of packet processing and increased east-west traffic. Choosing the right networking hardware becomes critical to achieving a cloud-native NFV solution that is agile, reliable, fast and efficient.

Outperform with Tomorrow's Network Today

Mellanox End-to-End Solution for the Highest-Performing NFV

ConnectX-4 and ConnectX-5 Adapters

- Single and Dual port
- 10/25/40/50/100G

Adapter Features:

- ✓ DPDK (Data Plane Dev Kit) for fast small packet performance
- ✓ ASAP^2 (Accelerated Switching and Packet Processing) offloads Open vSwitch (OVS) for the highest packet rates and lowest CPU utilization
- ✓ Faster virtualization with VXLAN / NVGRE / GENEVE overlay network offloads

SN Series Open Ethernet Switches

- 16-ports of 100G in ½ RU
- 32-ports of 100G in 1 RU
- 64-ports of 50G in 1RU

Switch Features:

- ✓ Predictability, zero packet loss, and full throughput at all packet sizes
- ✓ True cut-through switching for the lowest latency
- ✓ Choice of operating systems to eliminate vendor lock-in
- ✓ Lowest power, highest density

LinkX Cables and Transceivers

- Copper and active optical cables and transceivers
- 10/25/40/50/100G

LinkX Interconnects:

- ✓ DACs: Low cost, no power
- ✓ DAC Splitters: breakout 40G/100G to 10G/25G links
- ✓ AOCs: Lowest cost optical link - reaches to 200m
- ✓ SR & SR4: multi-mode transceivers reach to 300m
- ✓ PSM4 Silicon Photonics, single-mode transceivers reach to 2km

High performance networking hardware enables maximum NFV performance. Smart accelerators free up CPU cycles for Total Infrastructure Efficiency.

Mellanox Hardware Acceleration

Advantages for NFV

Accelerate Your VNFs with Mellanox ASAP²

NFV

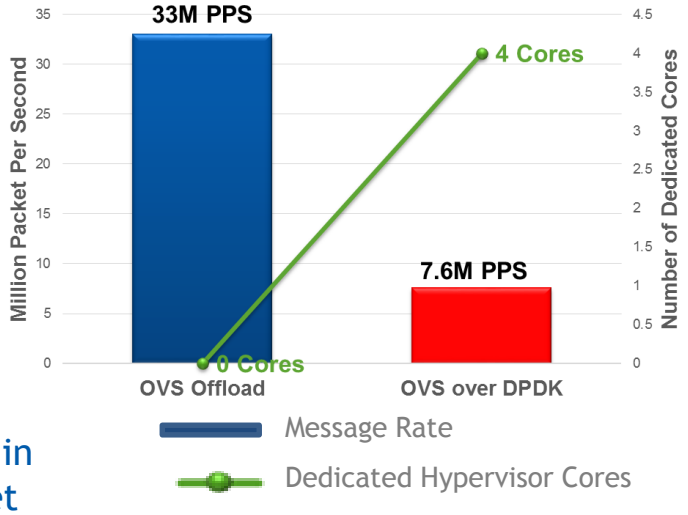
Network Function Virtualization

DPDK

DATA PLANE DEVELOPMENT KIT

ASAP²

Accelerated Switching & Packet Processing



Mellanox delivers the best DPDK performance in the industry and supports over 133Mpps. To get even better performance Mellanox offers ASAP² technology which dramatically increases packets-per-second by accelerating packet switching in hardware. The ASAP² accelerates OVS using an embedded network switch to process millions more packets than DPDK with nearly zero CPU overhead. This results in more efficient NFV and SDN.

Open vSwitch Hardware Offload

- Up to 4x more packets per second
- Reduces CPU overhead to nearly zero

Mellanox Solutions For NFV Acceleration and Efficiency

- Adapters optimize network performance using OVS, DPDK, RDMA, SR-IOV, and storage offloads.
- Record-setting DPDK performance
- Adapters and switches accelerate overlay networks using VXLAN, NVGRE, and Geneve, including VTEP support.
- Copper and optical cables and modules ensure high performance and reliable connections over distance.
- BlueField SoC supports high-speed networking with acceleration offloads and on-board 64-bit ARM cores to run network functions.

A Broad Partner Ecosystem is Pivotal in Your Success

Mellanox integrates with leading solutions and applications to deliver innovative functionality and efficiency. Key NFV partners include:

QOSMOS, Metaswitch Networks, redhat, CANONICAL, vmware, affirmed, cumulus, NOKIA, WIND, nuagenetworks

To learn more visit: http://www.mellanox.com/solutions/cloud/nfv.php