



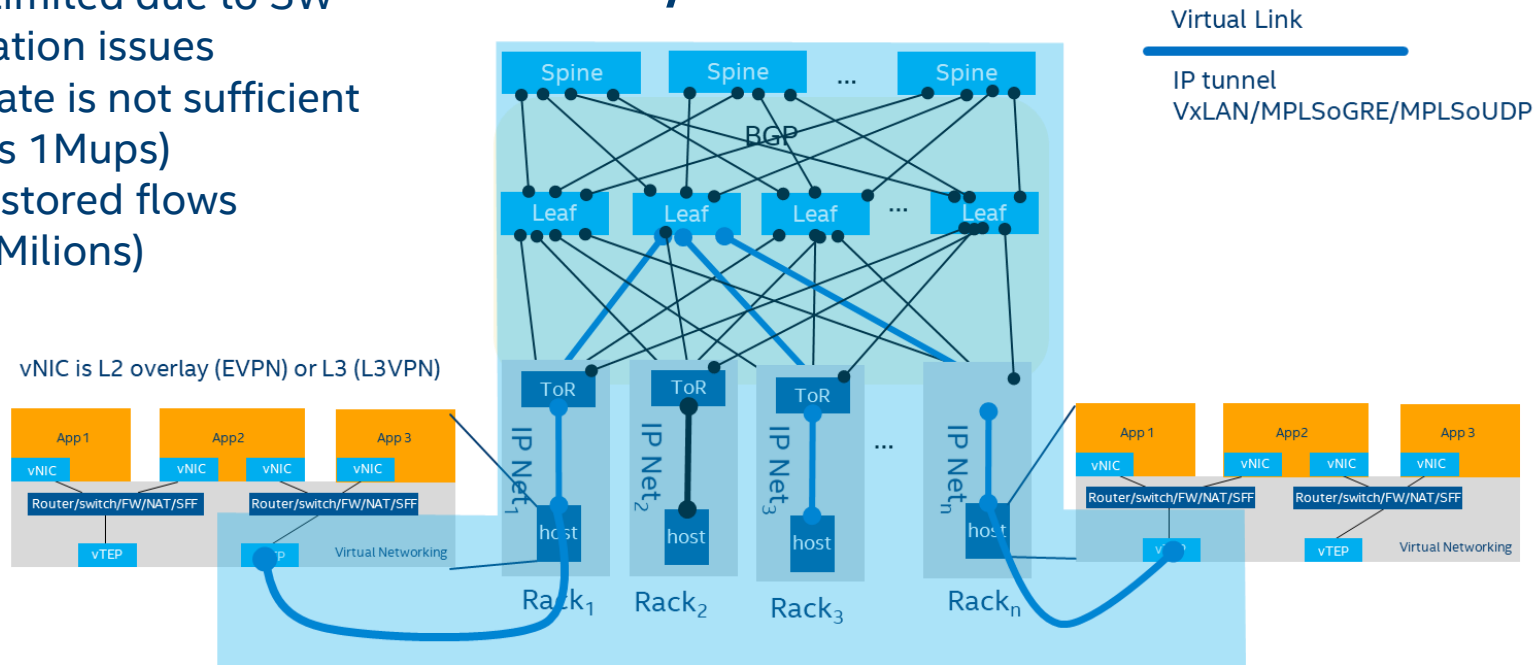
# FPGA AND VROUTER: FIXING A PERFORMANCE BOTTLENECK IN CLOUD- NATIVE ENVIRONMENT

Mirosław Walukiewicz, Solution Architect in PSG

# Cloud native infrastructure based on routers

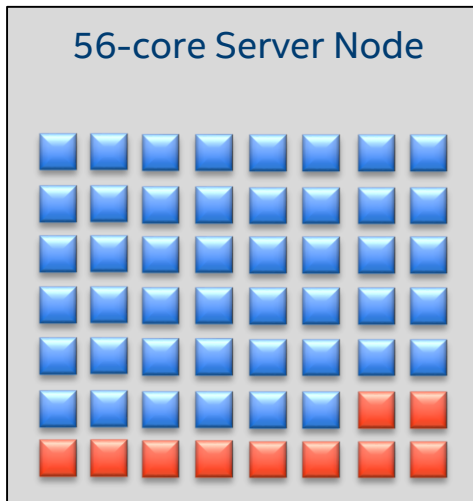
1. Performance limited due to SW synchronization issues
2. Flow update rate is not sufficient (100Kups vs 1Mups)
3. Not sufficient stored flows (should be Millions)

## BGP/IGP network



# Offloads Provide Significant TCO Savings for Service Providers

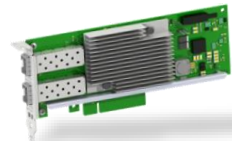
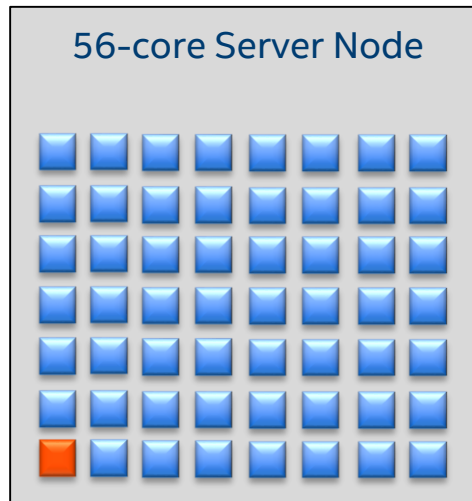
Not all cores are available for server workloads



Higher VM density = save thousands of dollars per IaaS server per Year\*

Infrastructure functions running on the host

SmartNICs can provide full functional offload



Standard NIC

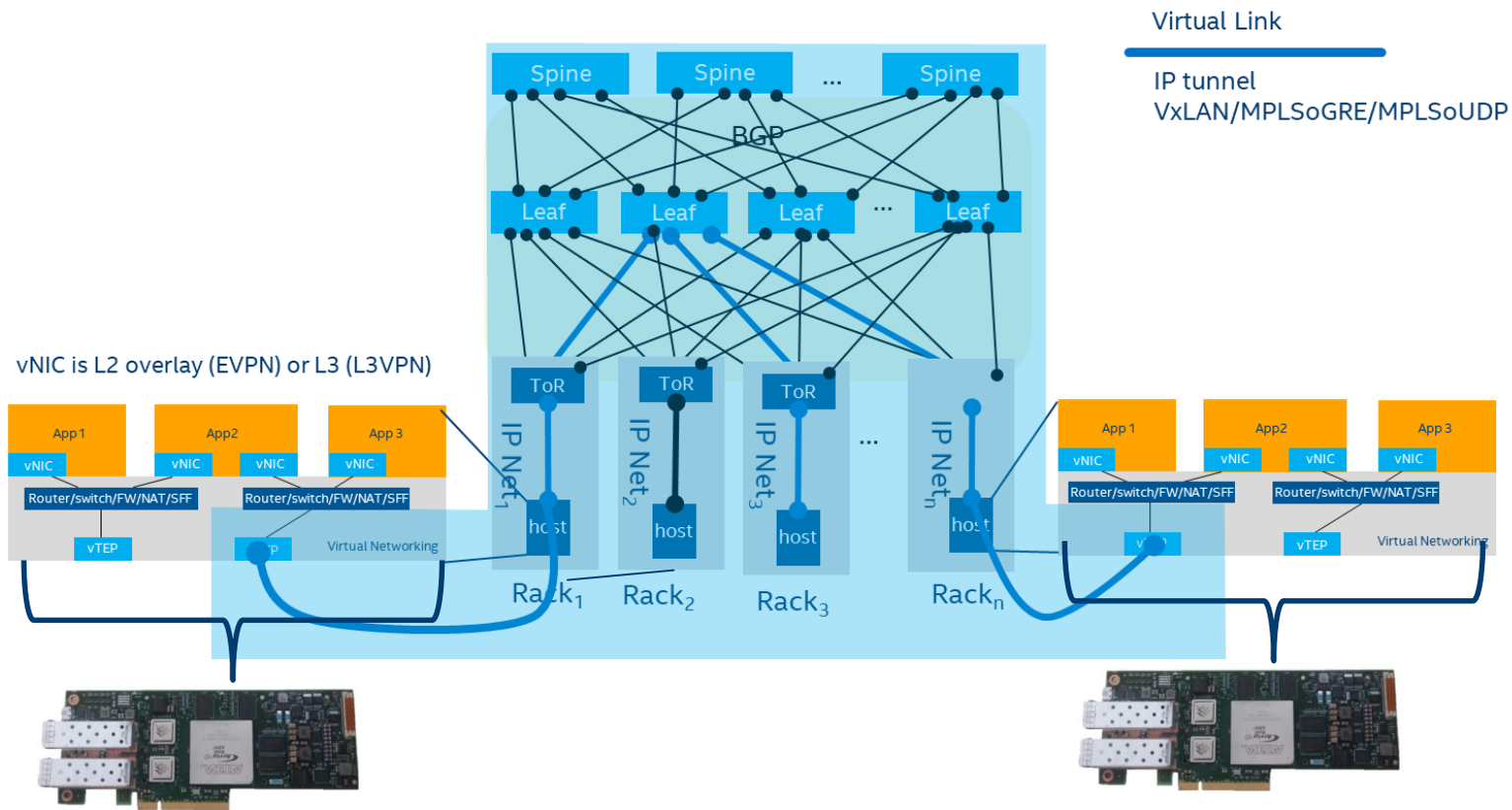
Reasonable cost increase



SmartNIC with functional offloads

\* 2015 data from top three CSPs running VMs or containers

# FPGA based Tungsten Fabric cloud



# N3000 Board specs.

First Intel Branded PAC card for NFV

In Production: Q4'18

- Intel PSG built and validated
- A10 1150, 8x10G/  
4x25G Network,  
PCIeGen3x16 Host
- 75W Estimated,  
passive cooled
- FHHL, single slot
- 8GB DDR, 144Mb QDR ,  
2 x 40G Fortville NICs



# Full flow-based Forwarding Plane in FPGA

Virtio-net

