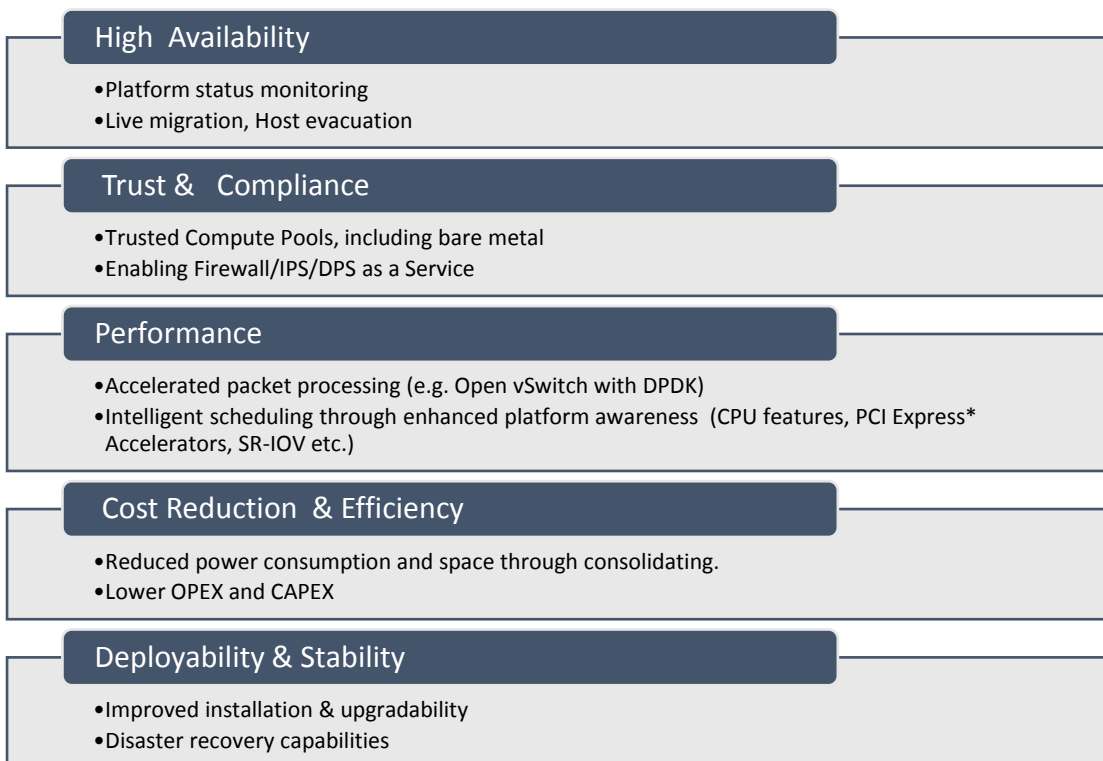# Agile – SDN in Cloud Networking

Why do we need SDN/NFV and for what?

Networking environment and operator are populated with a large and increasing variety of proprietary hardware appliances. The changing nature of application workloads places unprecedented and more requirements on network infrastructure. Furthermore, the virtualization and cloud computing still be advanced, so that the limitation of traditional network architectures is getting more difficult than ever. Thus, the Software-define network (SDN) and Network function virtualization (NFV) are going to be a great solution for many fields of modern IT application.

SDN is an architectural approach to networking that separates the data plane and control plane. Which means that you could enable the intelligence of a network device to be split from the packet-forwarding engine and centrally controlled. NFV aims to transform that way of network operators architect by network virtualization technology to consolidate many network equipment types onto standard servers. Thus, MSI has the completed network security series and server system products to support and can be customized as an infrastructure for NFV architecture. NFV is highly complementary to SDN and there are a lot of mutually beneficial items we can see.

SDN/NFV offer many benefits but not limited to:

High Availability
- Platform status monitoring
- Live migration, Host evacuation

Trust & Compliance
- Trusted Compute Pools, including bare metal
- Enabling Firewall/IPS/DPS as a Service

Performance
- Accelerated packet processing (e.g. Open vSwitch with DPDK)
- Intelligent scheduling through enhanced platform awareness (CPU features, PCI Express* Accelerators, SR-IOV etc.)

Cost Reduction & Efficiency
- Reduced power consumption and space through consolidating.
- Lower OPEX and CAPEX

Deployability & Stability
- Improved installation & upgradability
- Disaster recovery capabilities

SDN/NFV use case

SDN/NFV has expecially implemented and offered great distribution in cloud service and data center. Here are the SDN/NFV use cases and his valuable applications to be recommended and well-knowned.

- Maximize server virtualization through network virtualization
- Web scaling for cloud providers
- Network programmability and customization

- Provide L4-7 3rd party network service by virtual function network
  - Switching elements: BNG, NAT, routers
  - Tunnelling gateway elements: IPSec/SSL VPN gateways.
  - Traffic analysis: DPI, QoE measurement
  - Security functions: Firewalls, virus scanners, intrusion detection systems, spam protection.

MSI Network security network system for SDN/NFV

MSI Network security network system has various level of processor computing and swapped network interface card modules to optimize SDN/NFV infrastructure.

Figure 1. SDN/NFV network transformation
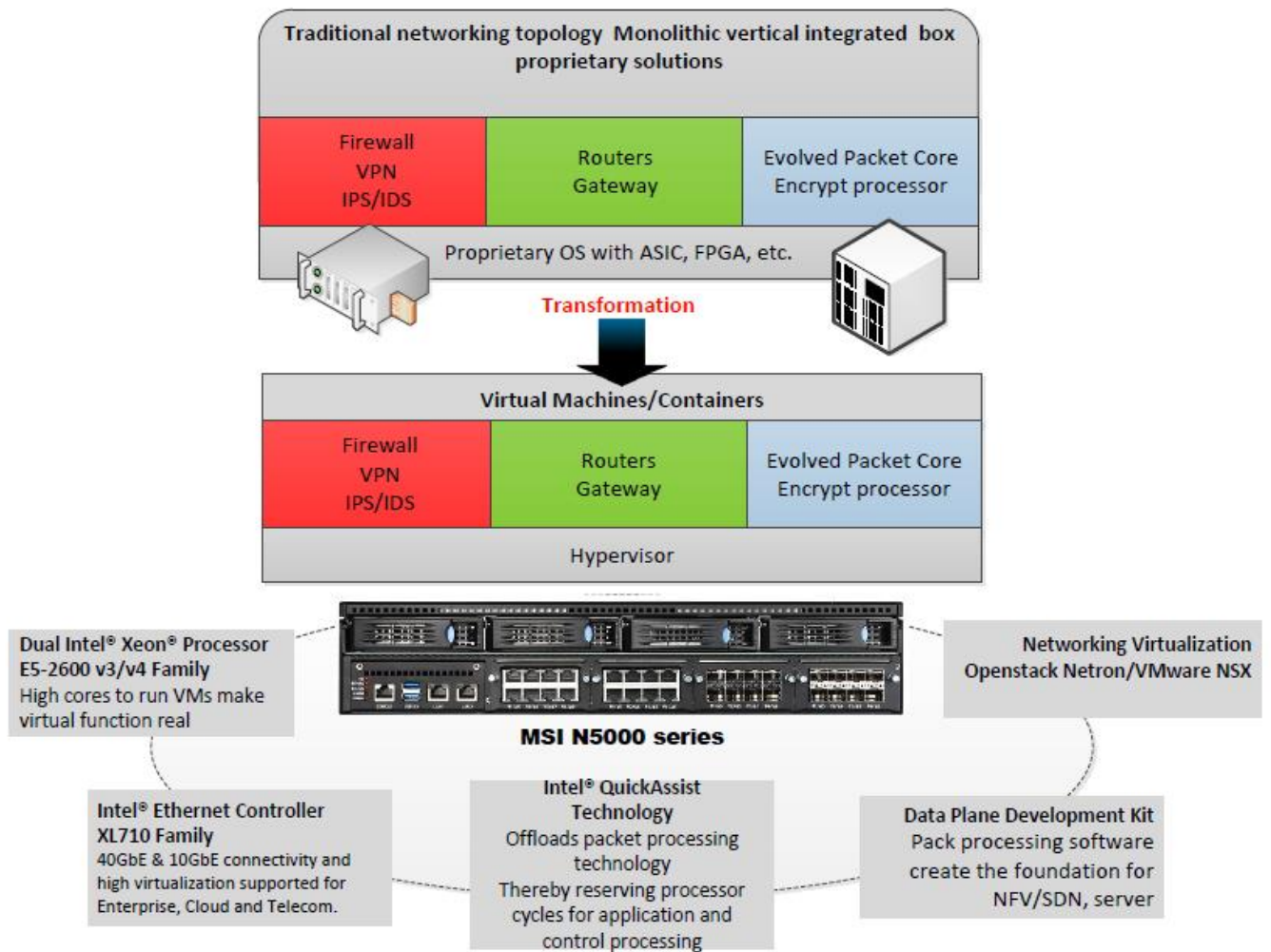
Figure 2. SDN in Cloud networking

Internet

Firewall
IPS/DPI/NAT
DMZ server

MSI N5000/N3000 series
40GbE/10GbE/1GbE

SDN Controller Cluster
1. Separation of control and data plane
2. Centralized management
3. Programmable network behavior

vmware
NSX

OPENDAYLIGHT

MSI N3000 series
10GbE/1GbE

Management

Data plane

Control plane

Leaf-Spine SW
40GbE/100GbE

Orchestrator
Openstack -Nutron

openstack

OvS
Open vSwitch

DPDK

KVM

SDN enabled
ToR Switch

SDN enabled
ToR Switch

SDN enabled
ToR Switch

VXLAN
vSwitch

VM VM VM VM VM VM VM VM VM VM VM

Computing/ Storage pool
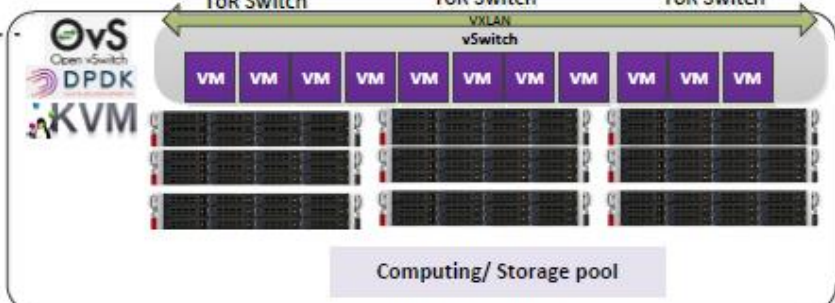
Summary

SDN technology is the most important role in modern cloud networking for improving performance and highly programming behavior today. The SDN controller is not only decouple control plane and data plane but also being a load balancer, programmable routing behavior and diversity intelligent networking management center. In data center/telecom, networking management and agile programming for smart security application to reducing OPEX/CAPEX is premier mission to carry out.

SDN in clouding networking is a great and advanced solution to face rapid growth network demand. According to OPNFV and ETSI NFV, SDN is a key and only to have 1. Separation of control plane and data plane 2. Centralized management 3. Programmable network behavior via well-defined interfaces (as figure 2 descripted). By reason of OVS with DPDK can greatly improve L3 packet forwarding which supported by MSI N5000& N3000 network security system series.

MSI N5000 series is powerful to sustain heavy computing and bandwidth as IPS/DPI/Firewall/… in data center architecture. Furthermore, N3000 series is appropriate to be a SDN controller by his swapped NICs module into diversity network combinations as well. Apparently, for a beginner to launch or SDN/NFV networking transformation in cloud environment. MSI network security system is the best and most flexible solution.

MSI solutions for Cloud networking

Performance
High end security solution in Telecom and large enterprise
o_o : Discover

Mainstream
Enterprise and campus security solution
o_o : Discover

4U
Huge capacity storage server
o_o : Discover

3U
Optimized for computing and storage balance
o_o : Discover

2U
Most popular size for storage server
o_o : Discover

1U
Economized space with high computing solution
o_o : Discover