

Transforming Networks with NFV & SDN

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General Manager, Communications and Storage Infrastructure Group

Intel Corporation



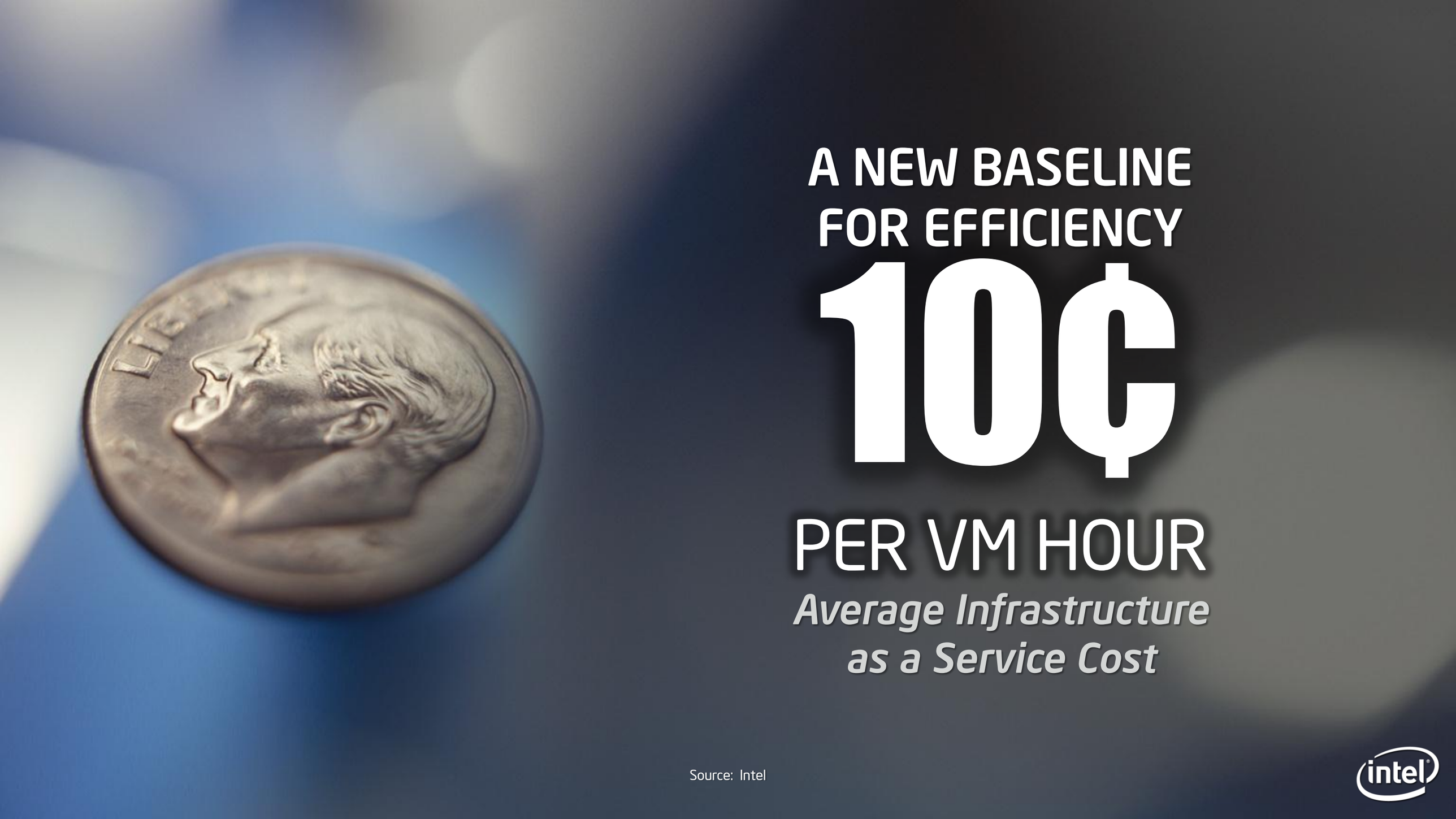

"A strategic inflection point is an event that changes the way we think and act."

Andrew Grove

Transformation`


Transformation

What Problems Do NFV & SDN Solve?


A NEW BASELINE
FOR EFFICIENCY
10¢
PER VM HOUR
Average Infrastructure
as a Service Cost
Source: Intel
intel

The Tip of The Iceberg

Datacenter SDN

Server, Router, Switch
Network Appliance

The Tip of The Iceberg

Datacenter SDN

Server, Router, Switch
Network Appliance

Service Provider SDN + NFV

Access:
LTE Base Station,
Cloud RAN

Edge:
Border Network Gateway,
Media Gateway

Core:
Evolved Packet Core

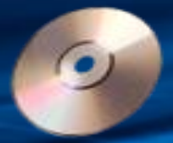
NFV & SDN are Driving Architectural Transformation

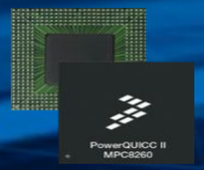
From This…

Firewall

VPN

Intrusion Detection System





TEM/OEM Proprietary OS

ASIC, DSP, FPGA, ASSP

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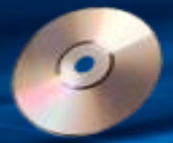
Intrusion Detection System



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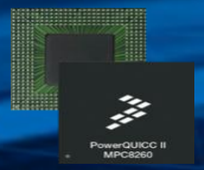


ASIC, DSP, FPGA, ASSP

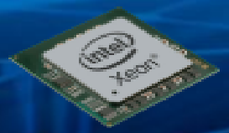
To This...

VM: Firewall

VM: VPN

VM: Intrusion Detection System

SDN

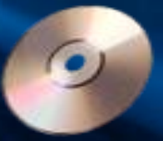


x86 CPU

NIC Silicon

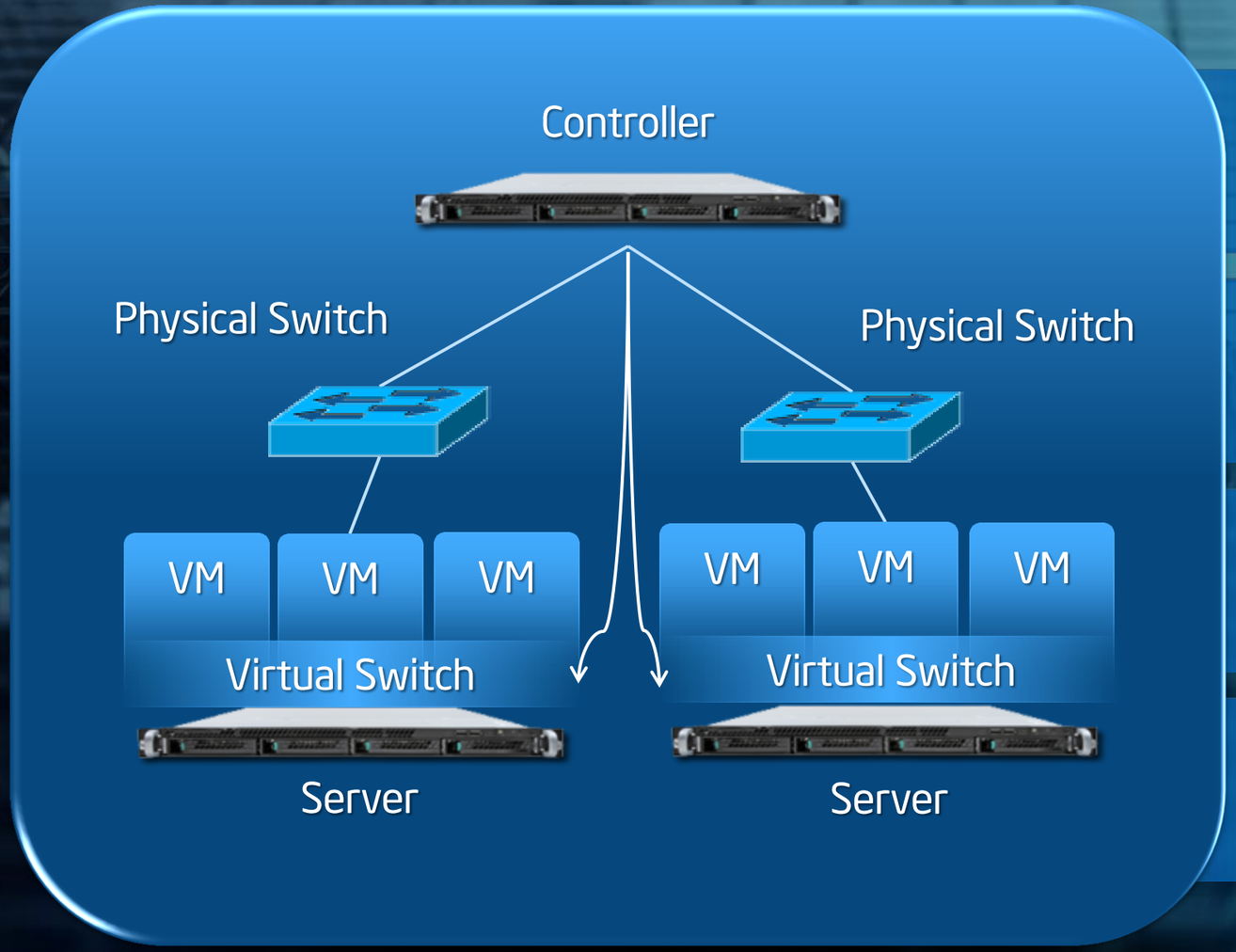
Chipset Acceleration

Switch Silicon



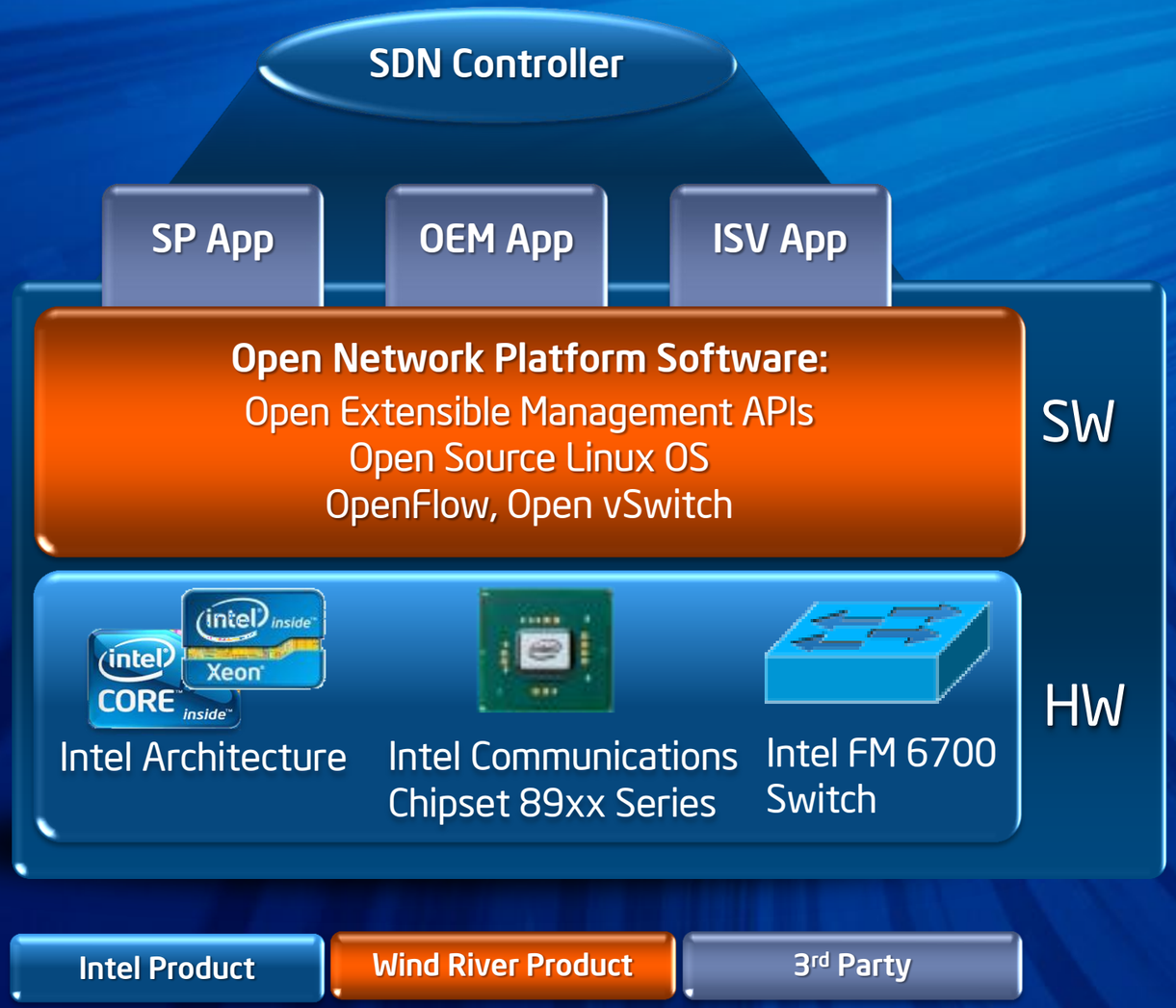
Linux

Architecting the Node… What's Needed?



- Open APIs for a unified control plane
- Physical Switching
- Virtual Switching
- Hybrid Switching

Launching Today
Open Network Platform Switch Reference Design



Launching Today
Open Network Platform Switch Reference Design

Early Development Partners

vmware®
VYATTA® A Brocade® Company
hp
f5®
AT&T FOUNDRY™
SUPERMICRO®
NTT DATA
NEC
big switch networks
中華電信 Chunghwa Telecom

intel WIND RIVER

First Production Platform

Quanta™ Optimize Your Datacenter T3048-IZ1

*Other brands and names are the property of their respective owners

intel

Announcing Today…
Intel® DPDK Open vSwitch

Memory Management

Queue / Ring Functions

Flow Classification

NIC Poll Mode Drivers

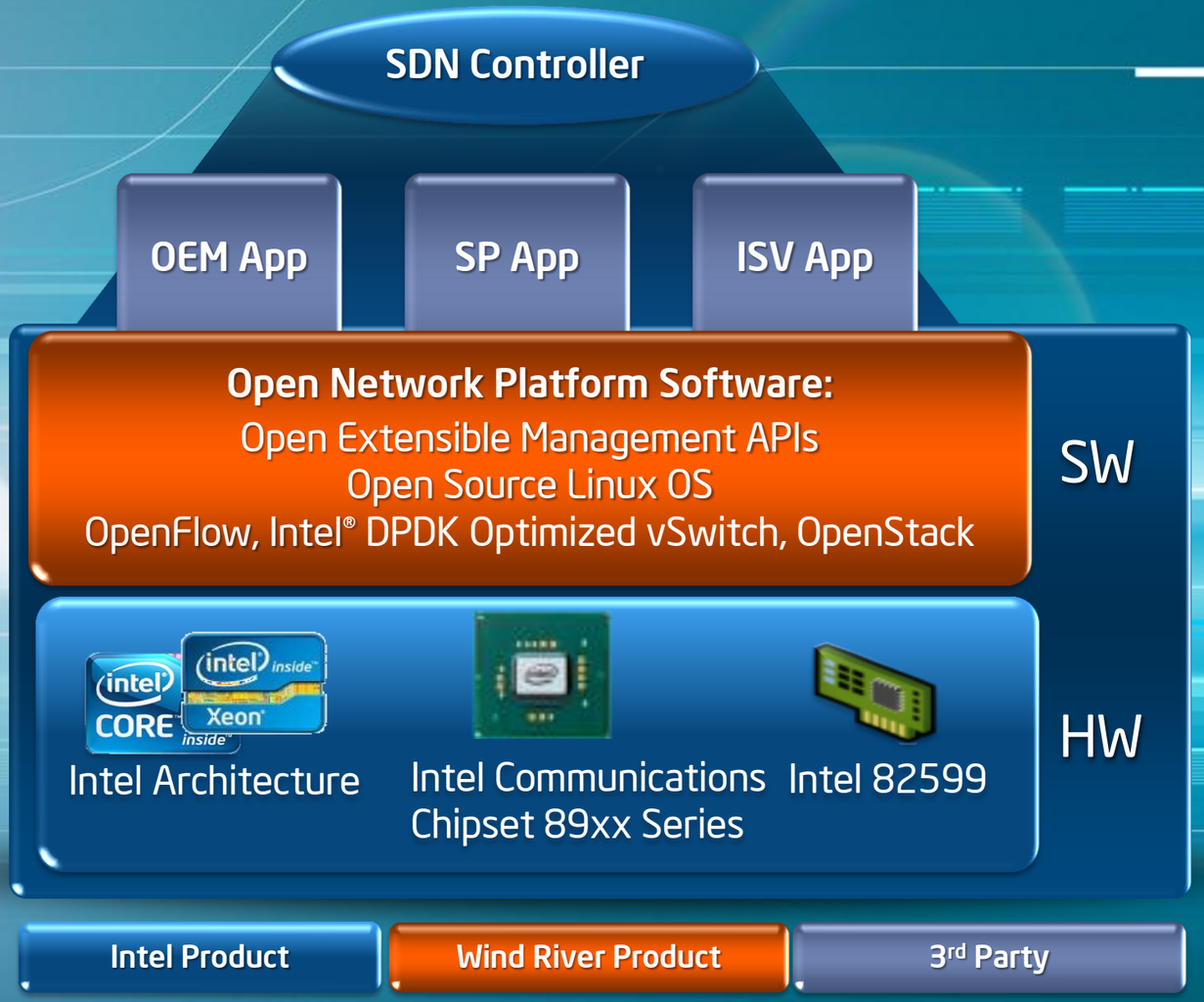
OPEN vSWITCH
An Open Virtual Switch

Project Objectives

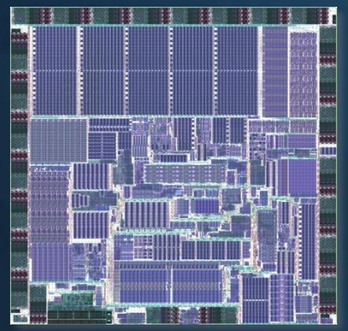
Improve small packet throughput
User space implementation
Compliment Intel's hardware switching
Use existing OVS infrastructure

intel

Announcing Today…
Open Network Platform Server Reference Design

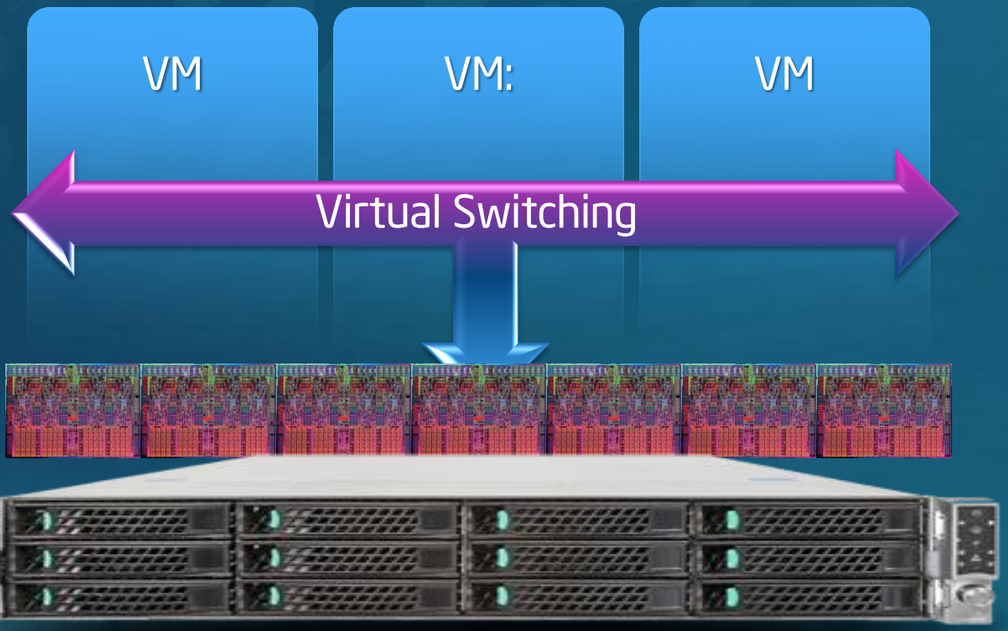


Investing to Lead a New Paradigm in Networking



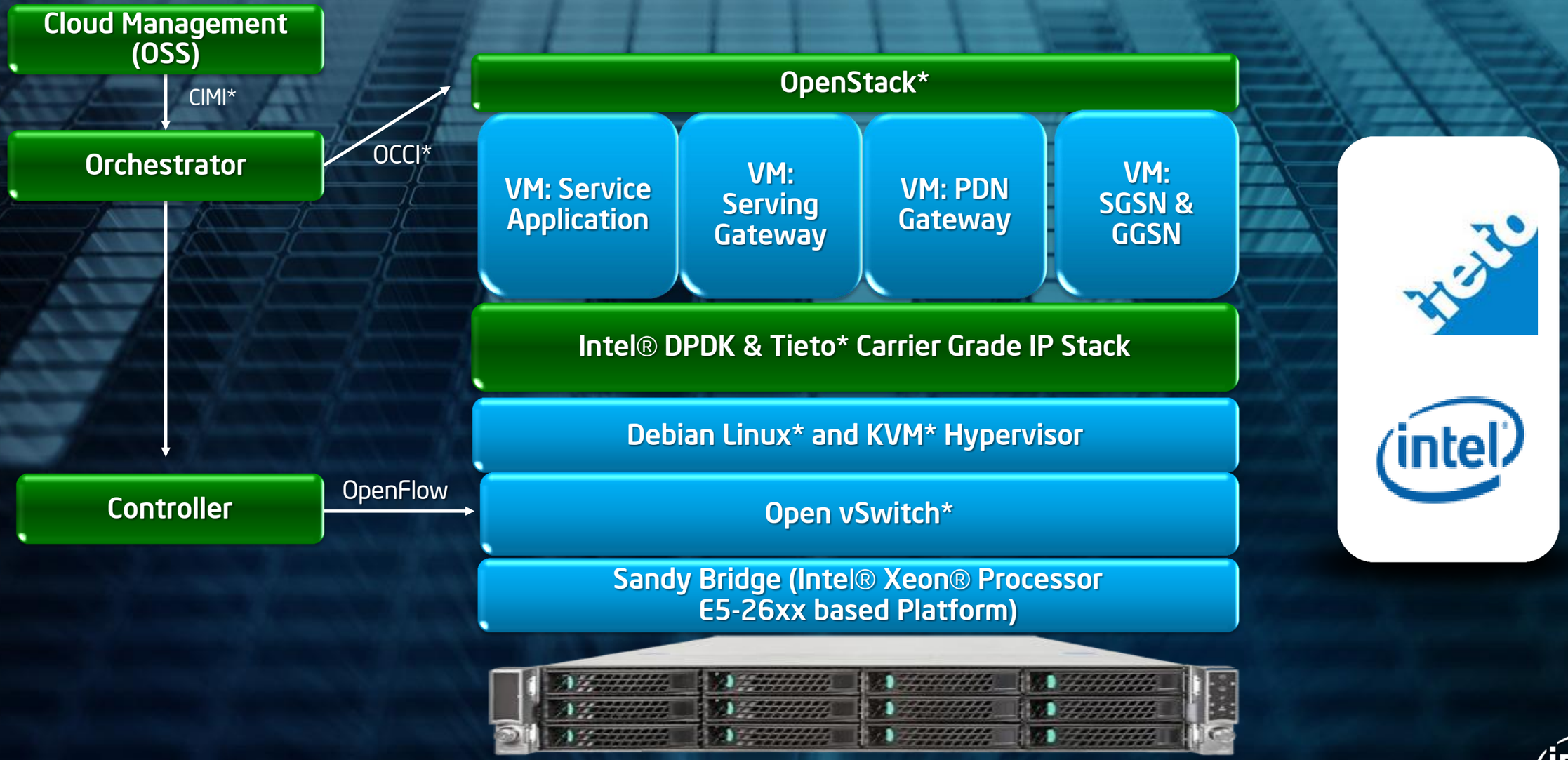
Physical Switching

Hybrid Switching



Architecting a Cloud Evolved Packet Core

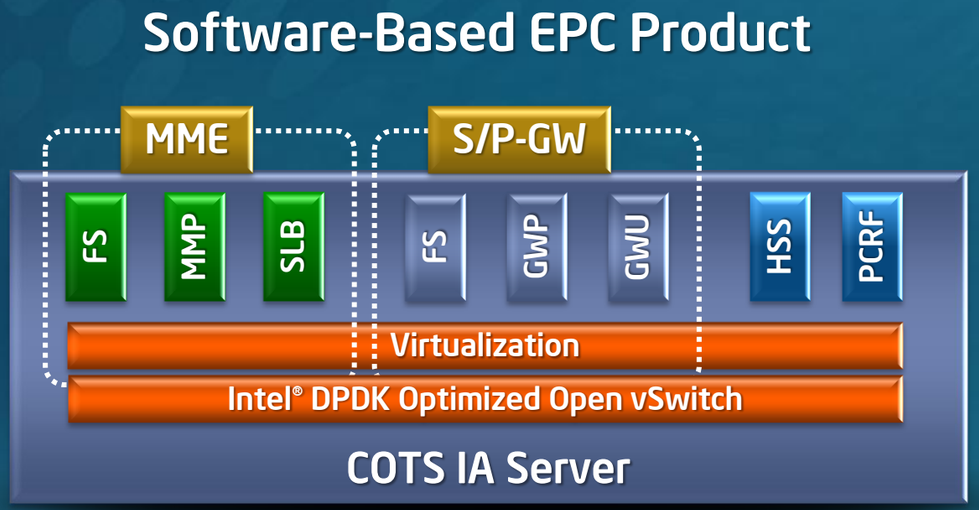
Intel and Tieto POC



NEC and Telefónica to Collaborate on Network Virtualization

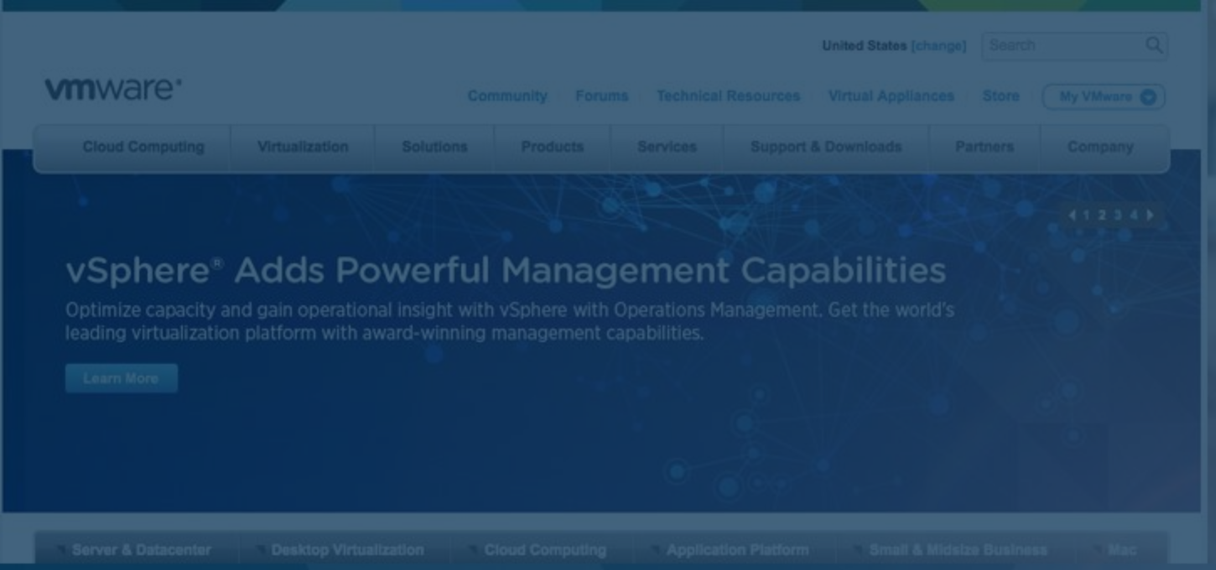
"NEC and Telefónica have produced the first real case study of virtualized EPC (Evolved Packet Core)"

Telefónica Feb 21, 2013

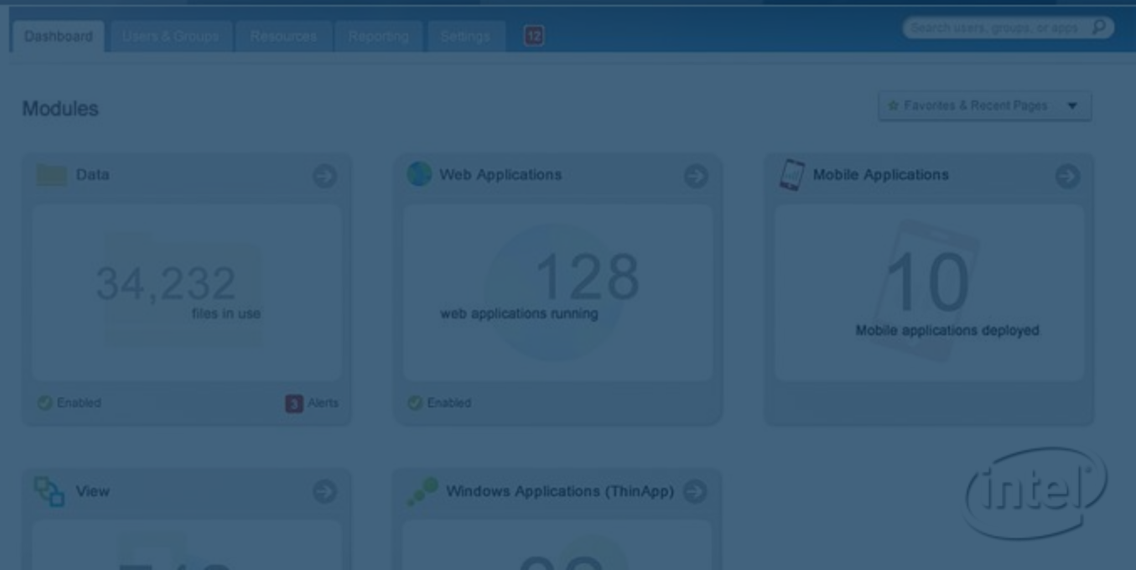


NEC Telefónica

intel

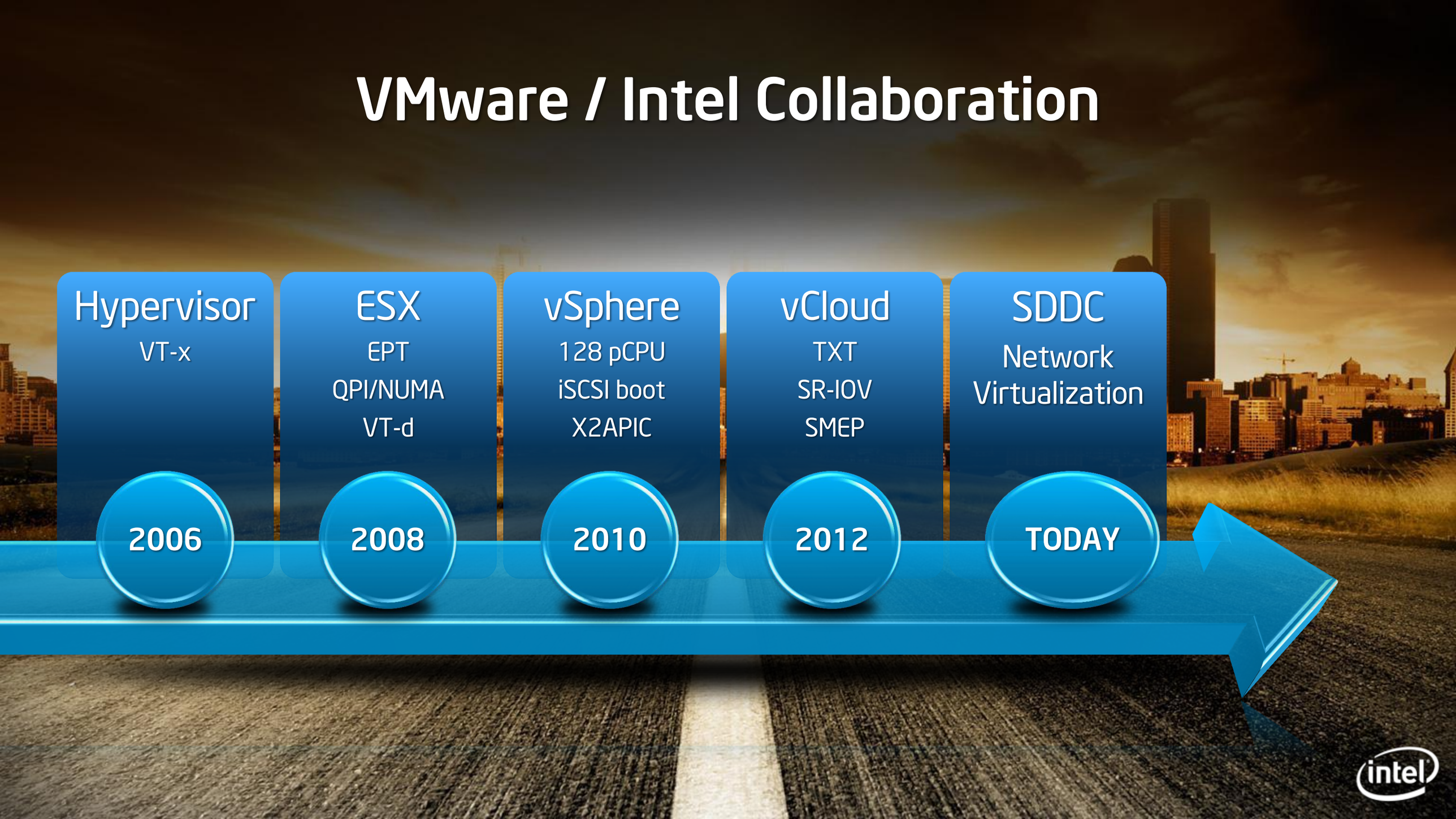


VMware NSX – The Network Virtualization Platform




Allwyn Sequeira
VP, Networking and Security
VMware
intel

VMware / Intel Collaboration



VMware – The Software-Defined Datacenter

New architecture needed: horizontal SW building blocks on x86 HW

Huge opportunity: new operating model will transform network economics

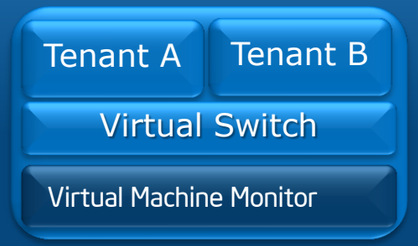
Open standards critical for success at the node

VMware NSX - Transforming the Network for the Cloud Era

Intel IT SDN Proof of Concepts Underway

Intel Intra-Data Center Usage Models

Leveraging VMware Network Virtualization

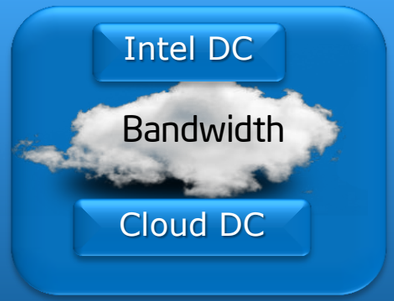


Tenant Based Modeling

Reducing our TCO to deploy VMs

vmware

Intel DC-Verizon-DC Usage Models



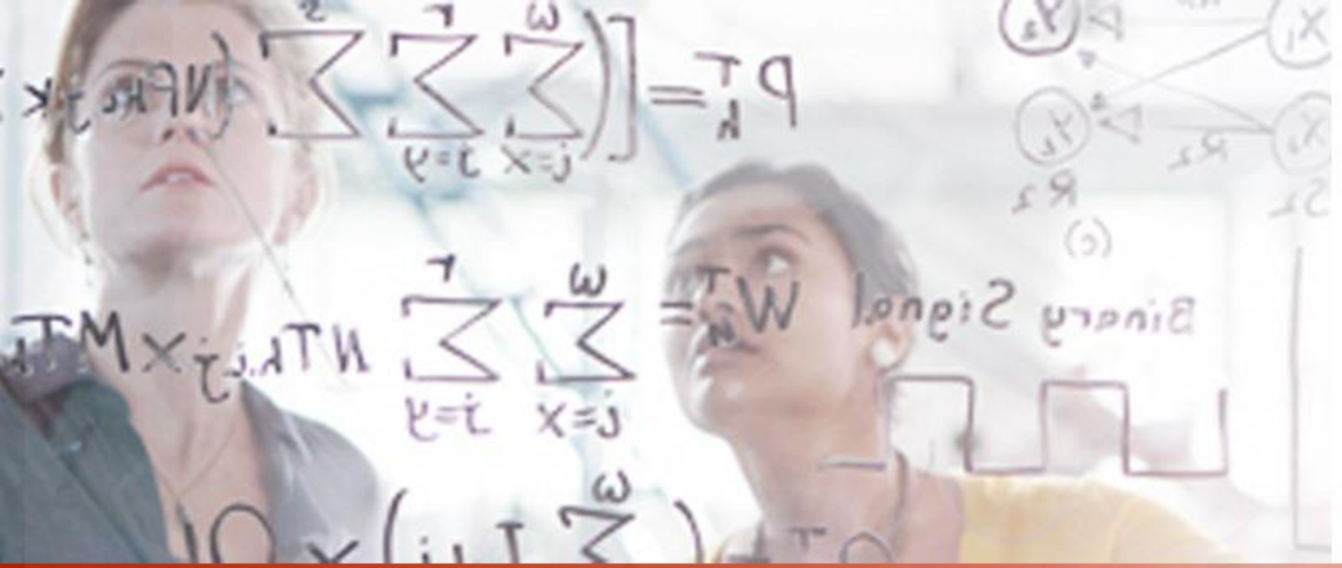
Cloud-bursting to increase bandwidth

Adding security to Cloud VMs

Network Monitoring

hp verizon

intel

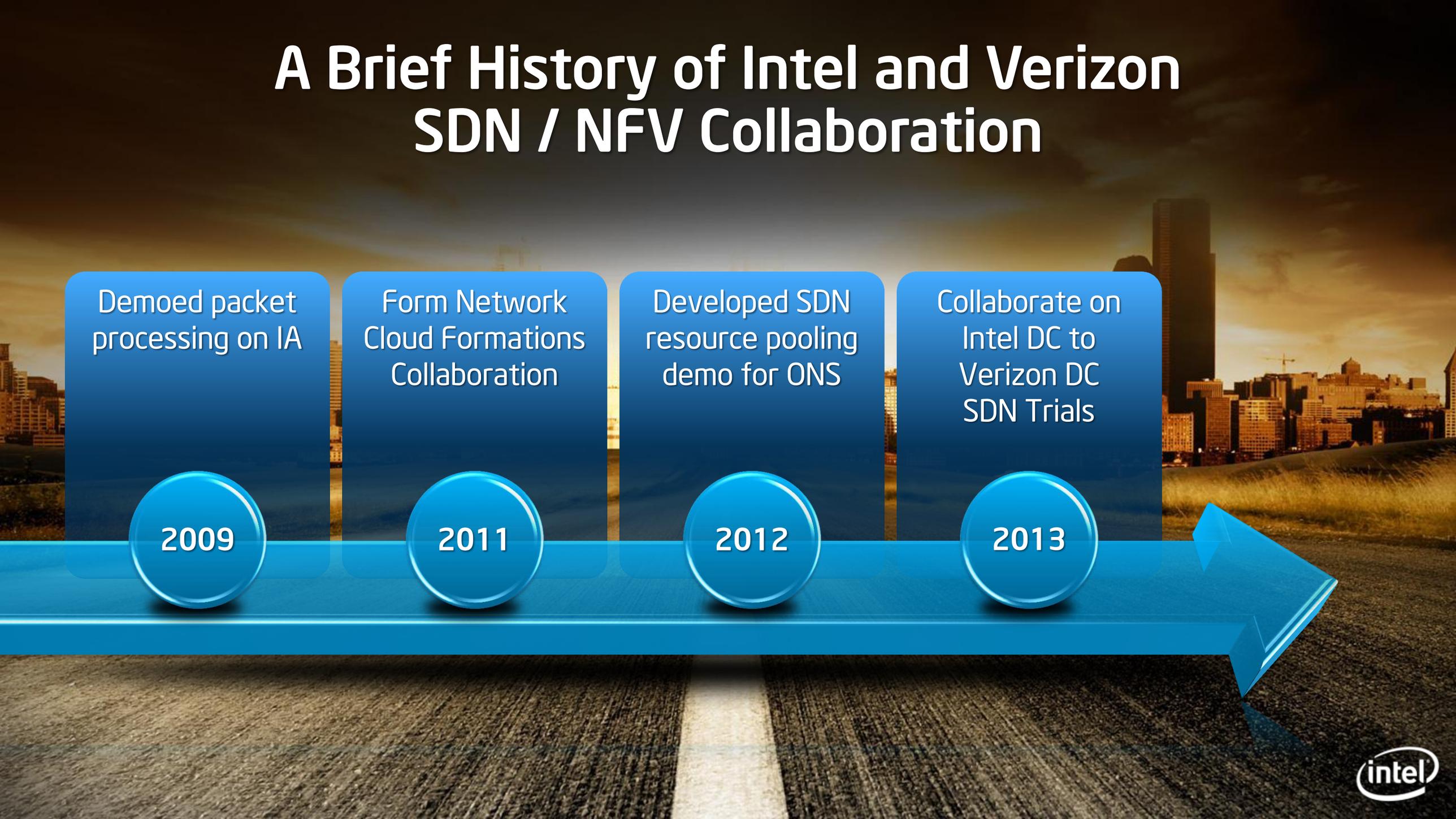


verizon

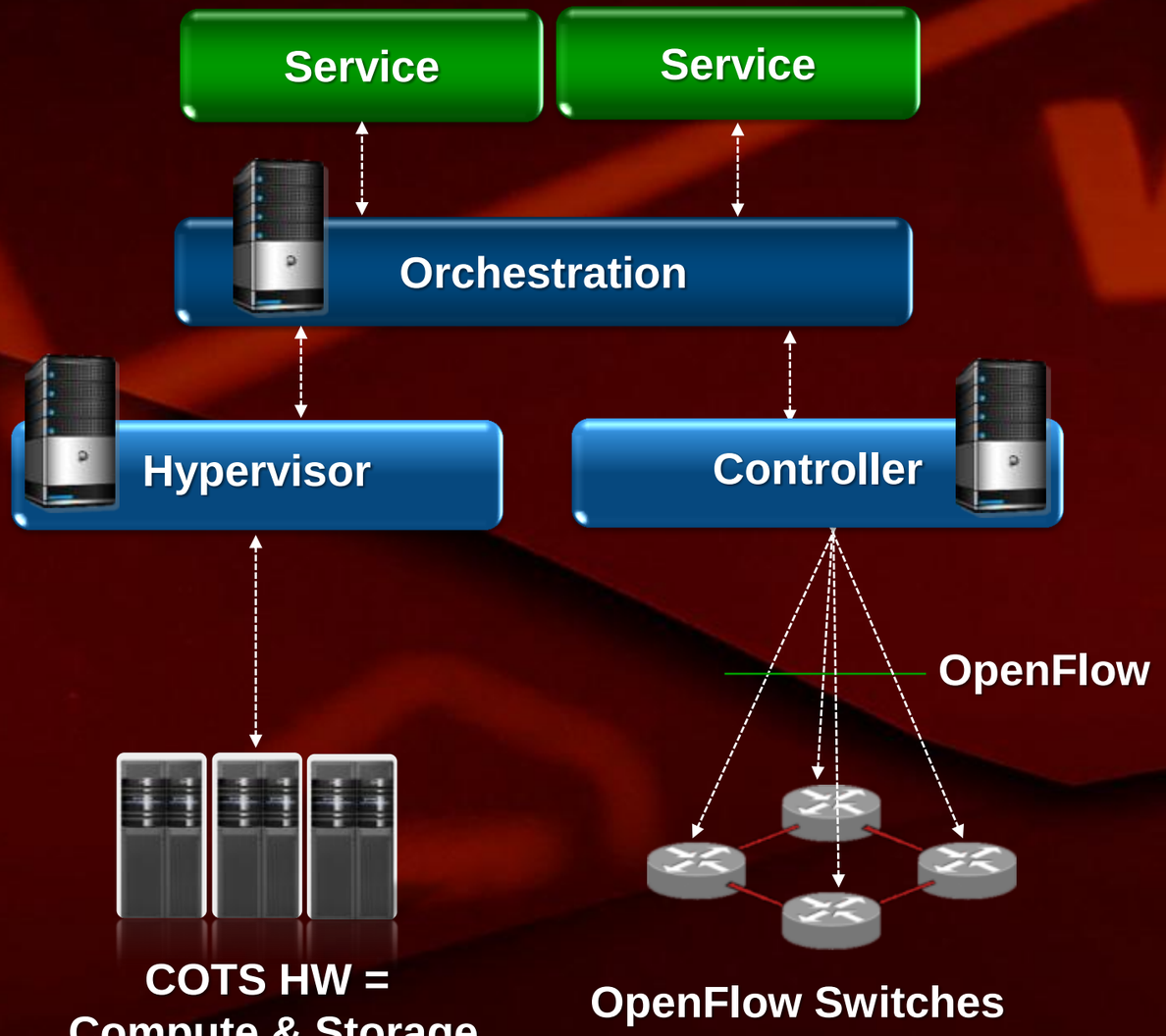
4G LTE


Prodip Sen
Director of Network Architecture
Verizon Communications
intel

A Brief History of Intel and Verizon SDN / NFV Collaboration



Verizon SDN and NFV Priorities



Objectives

Better CAPEX ROI

Lower Operating Expenses

Business Agility

New ways to monetize infrastructure

Enablers ("SDN" and "Cloud")

Implement network functions on SHV/COTS hardware

Virtualization of network functions

Application/service aware routing

Orchestration of network and cloud resources

Intel DC to Verizon DC SDN Trial

Cloud-bursting to increase network bandwidth

Adding security to Cloud VMs without physical appliances

Network Monitoring virtualized apps in Verizon's DC

Intel Lab
Private Cloud
Portland, OR

Verizon Lab
Public Cloud
Waltham, MA

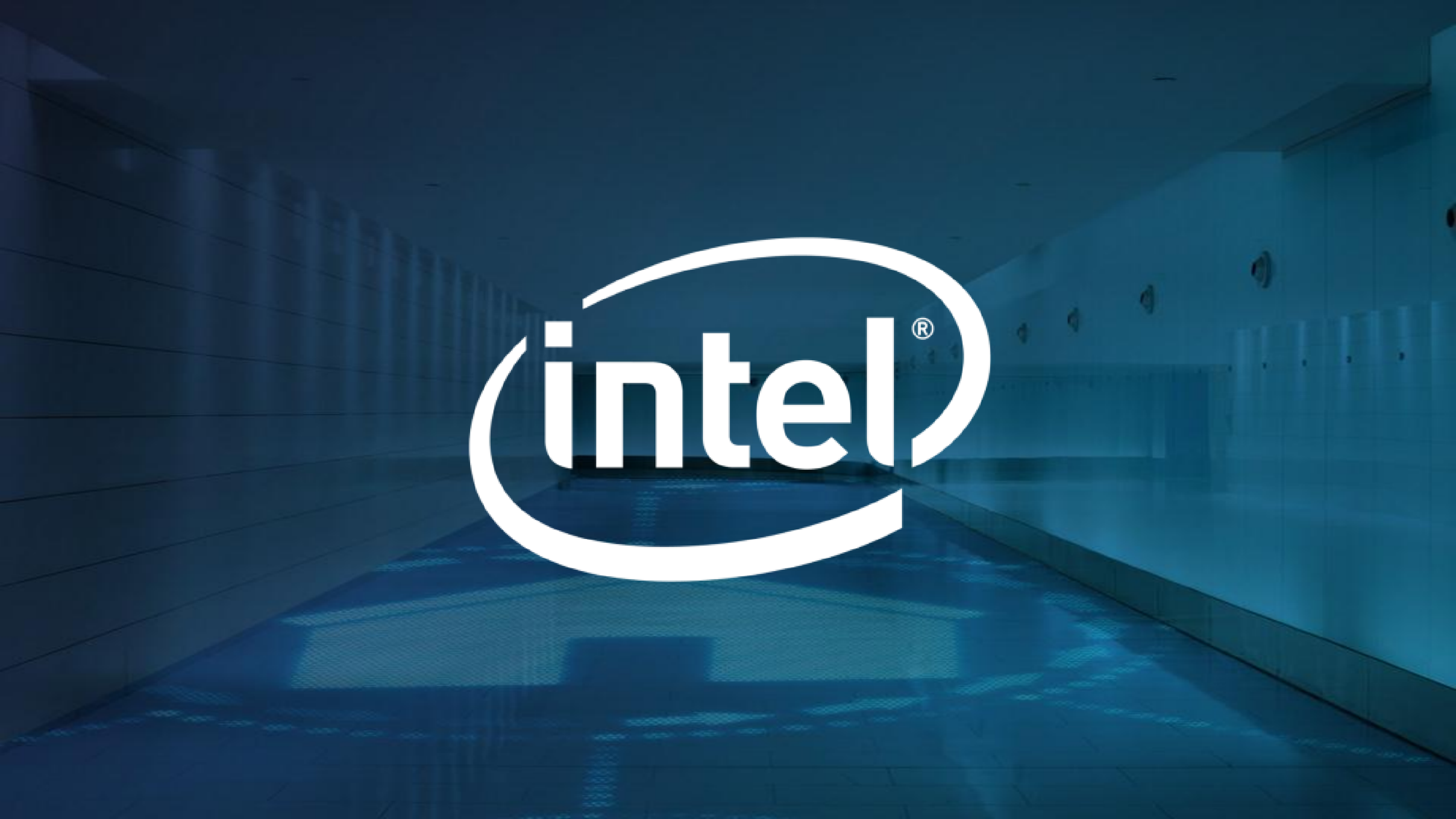
HP Lab
SDN SW Development
Plano, TX

Summary

SDN and NFV are Enabling a Network Transformation

Intel and Collaborators are Leading the Transformation across Cloud, Enterprise and Telco

Intel is Investing in Software, Silicon, and Reference Designs to Enable the New Network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