

# Forwarding Plane Opportunities: How to Accelerate Deployment



**Paul Stevens, Marketing Director, Advantech Cloud IoT Group**

# Virtualize, Automate & Deploy with Commercial White Boxes

ADIANTECH



Enablement

vEPC

vSecGW

SD-WAN

uCPE

vBNG

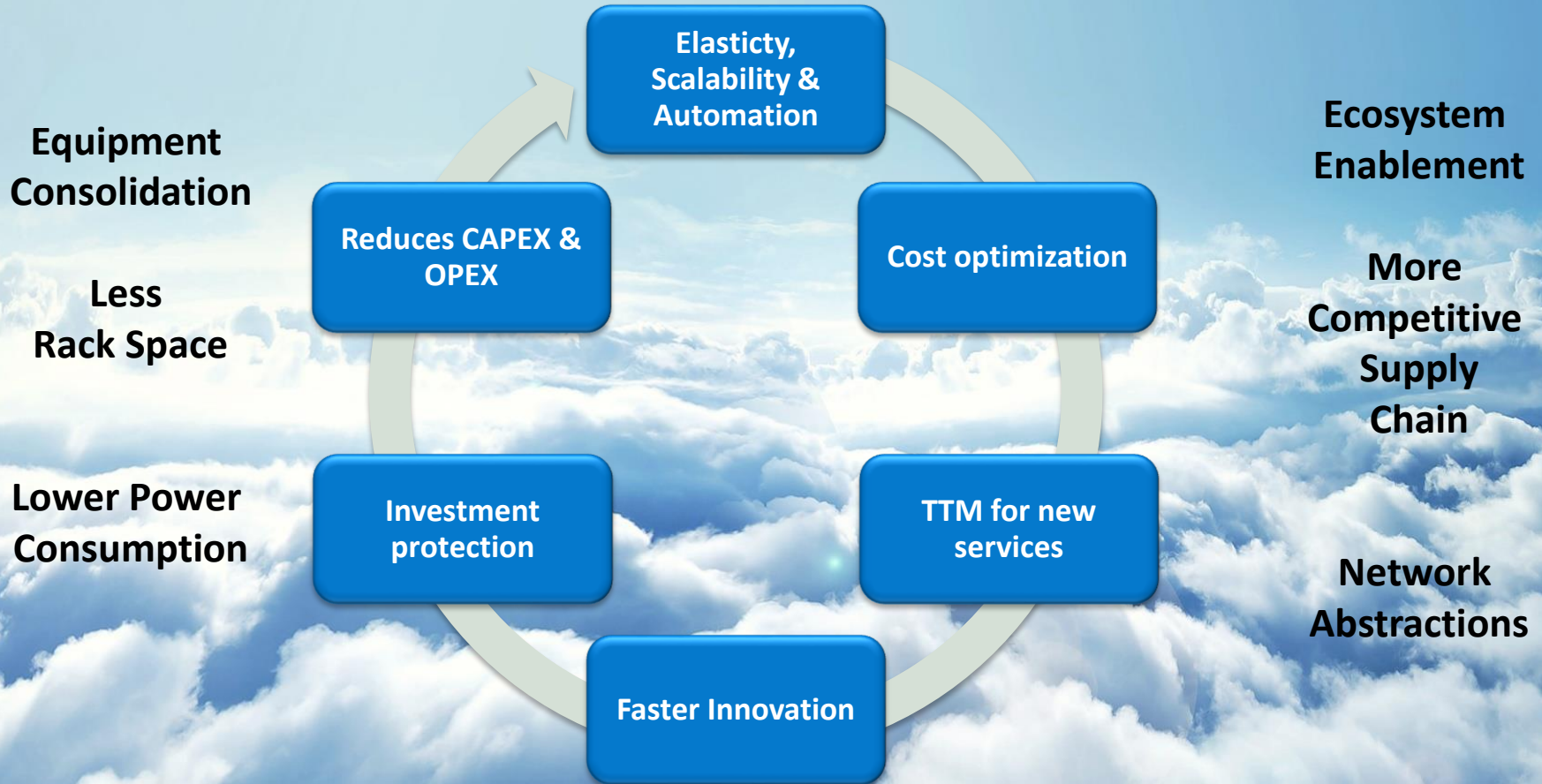
vRouter

vCGNAT

vFW

vCMTS

# Transformational Benefits of SDN & NFV





# Challenges Along The Way

The background of the slide is a photograph of a blue athletic track. In the foreground, there are several hurdles with 'SPAR' and 'BARCELONA' branding. A runner is visible in the middle ground, wearing a white and red jersey with 'Duerinck' on it. The track has white lane markings and some yellow markings near the hurdles.

**Interoperability  
& No Standard  
HW definition**

**Replacing  
existing  
infrastructure**

**Performance  
Predictability**

**Complexity**

**Integration**

A hand holding a watch over a stack of US dollar bills. The watch has a white face with black numbers and a black leather strap. The background is a stack of US dollar bills, with the number '529806' visible on one of the bills.

# TIME & MONEY

Evaluation

RFI/RFP

Validate

Trial

Go To  
Market

Accelerated with Verified Intel® Select Solutions



# Key Values of Intel® Select Solutions for NFVI

**SIMPLIFIED  
EVALUATION**

**FAST & EASY  
TO DEPLOY**

**WORKLOAD  
OPTIMIZED**

Verified S/W  
Framework

Baseline  
Performance  
Thresholds



Defined  
System  
Feature sets

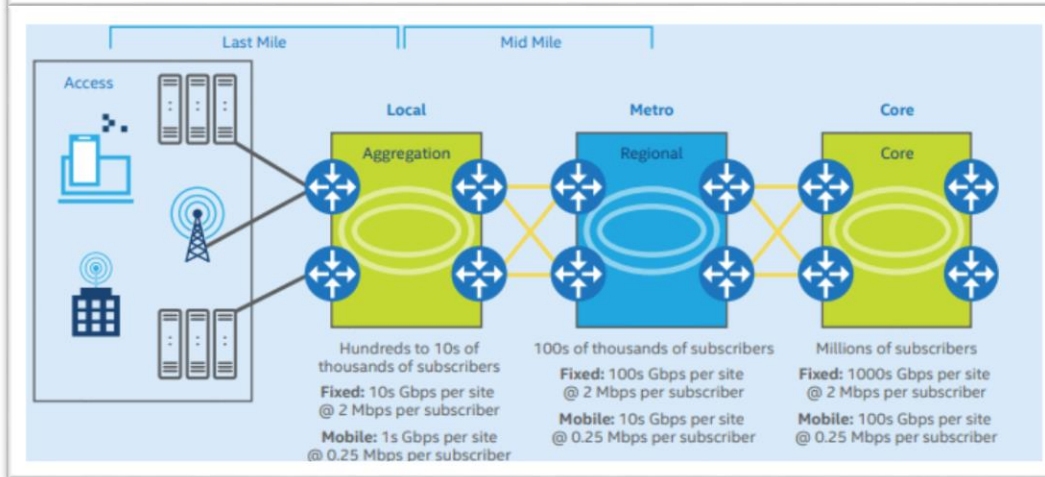
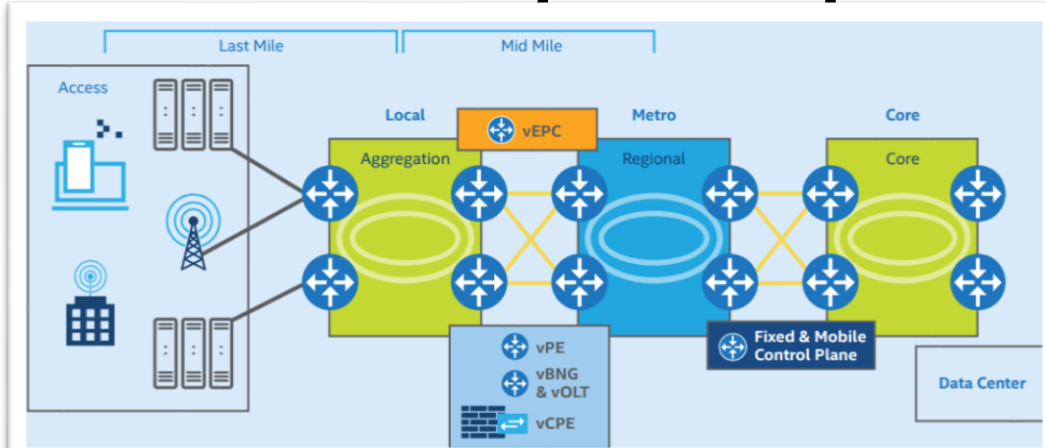
Optimum  
System  
Architecture



# Why a New Forwarding Plane Initiative ?



# Where are the packets processed?



- Aggregation
  - Last & Mid Mile
  - Outdoor Cabinets
  - Telco locations (CO/PoP)
- Regional
  - Mid Mile & Central
  - Telco locations (CO/PoP)
  - Telco Datacentres
- Core
  - Central
  - Telco Datacentres



# User Plane Services throughputs @specific network locations

Core Network Sites	16 Tbps
vEPC (virtual Evolved Packet Core)	
vGiLAN (virtual Gateway Interface Local Area Network) 5G UPF (User Plane Function)	
vIMS (virtual IP Multimedia System)	

Regional PoPs	1 Tbps
vEPC (virtual Evolved Packet Core)	
vGiLAN (virtual Gateway Interface Local Area Network)	
vIMS (virtual IP Multimedia System)	
vCGNAT (virtual Carrier-Grade Network Address Translation)	
vCRAN (virtual Cloud Radio Area Network)	
vCDN (virtual Content Distribution Network)	

Remote COs	500 Gbps
vBNG (virtual Broadband Network Gateway) CMTS (Cable Modem Termination System)	
dEPC (distributed Evolved Packet Core) / S/P GW (Secure/Packet Gateway)	
vDPI (virtual Deep Packet Inspection) / vCPE (virtual Customer Premise Equipment)	
MEC (Multi-Access Edge Compute)	
CMTS (Cable Modem Termination System)	

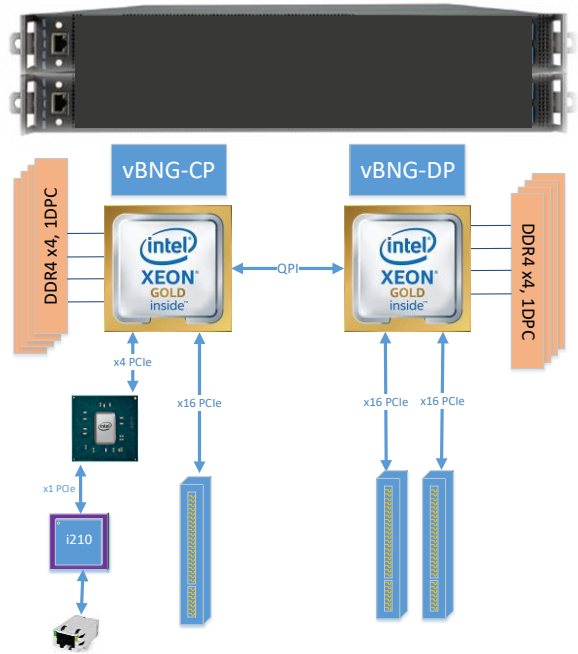
Access COs	160 Gbps
vRAN (virtual Radio Access Network)	
vOLT (virtual Optical Line Terminator) / DSL (Digital Subscriber Line)	
MEC (Multi-Access Edge Compute)	
CMTS (Cable Modem Termination System)	

Customer Premises	80 Gbps
vFW (virtual Firewall)	
vSecGW (virtual Security Gateway)	
uCPE (Universal Customer Premise Equipment)	

**400 Gbps**  
Per dual socket  
NUMA Node

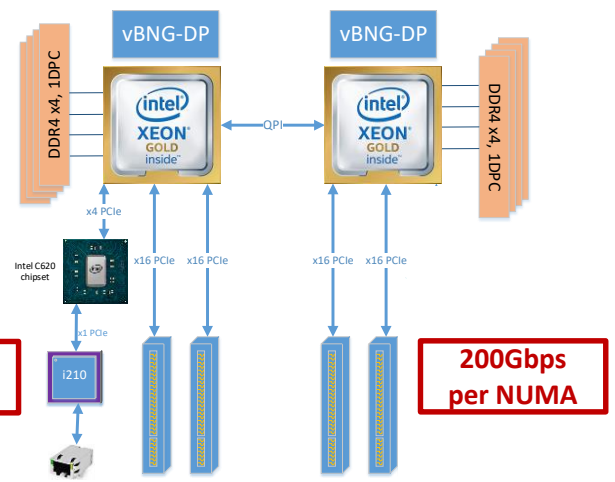
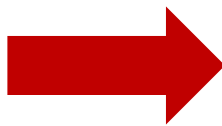
# vBNG example: Standard IT vs Intel® Select Solution

## Traditional IT Platform



2 Main Deficiencies :-  
Asymmetric Design  
Does not Maximize Design for Maximum IO

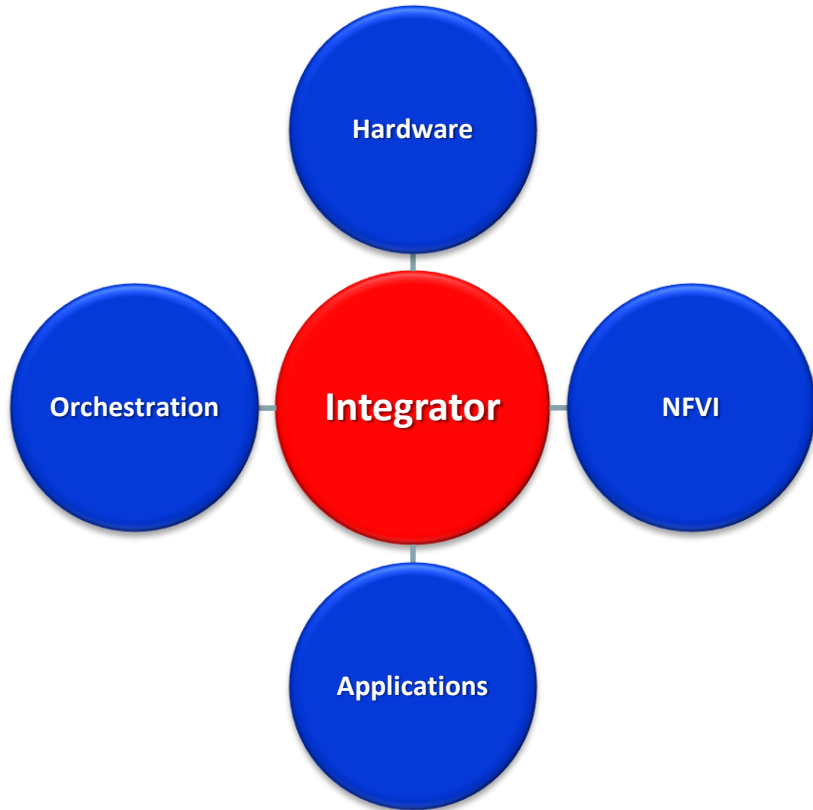
## Optimal Intel® Select Solution for NFVI FP



Balanced IO across sockets enabling dual DP server maximize Data plane processing for vBNG.



# Bringing it all together to Accelerate Deployment

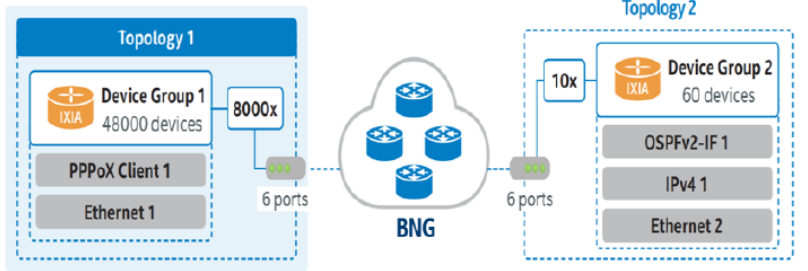
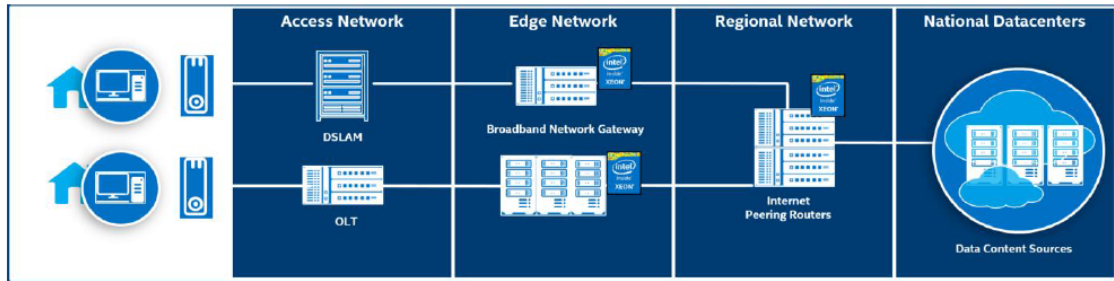
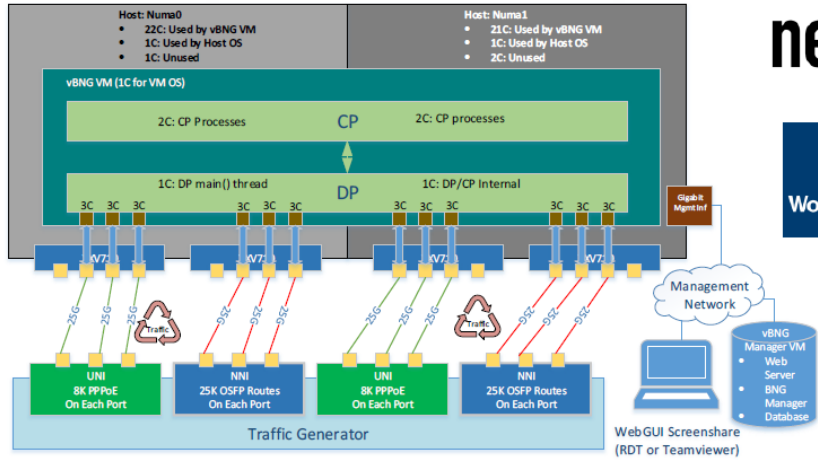


- ✓ No Single Blueprint
- ✓ Integrating all blocks is key
- ✓ In an NFVI project any component provider can take the lead
- ✓ Customers ultimately start with, or transition to a Single Point of Contact



# DEMO ILLUSTRATION

**ADVANTECH SKY-8101D**



Broadband Network Gateway (BNG) is the access point for subscribers to connect into the broadband network. Thus, BNG a Network Services implemented between the DSLAM/CPE to Providers Infrastructure for broadband access



Intel, the Intel logo, Intel Atom, and Xeon are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries.

# WWT, Advantech, netElastic & Red Hat demonstrate Intel® Select Solutions for NFVI FP on 2<sup>nd</sup> Gen Intel® Xeon® Scalable processors



*Press Release*  
**ADVANTECH**

## Advantech Announces New Intel® Select Solution for NFVI Forwarding Platform

*Multi-Partner Solution Demonstration Featured at SDN NFV World Congress*

- **Integrated on Advantech SKY-8101D 1U, dual socket, 400Gbps throughput server based on 2nd Gen Intel® Xeon® Scalable processor family**
- **Targets 4G and 5G User Plane Functions, broadband use cases such as vBNG, vBRAS, vEPC, vSecGW, and cable use cases such as vCMTS**
- **Commercial vBNG solution to be demonstrated at Intel's booth with partners RedHat, netElastic and WWT**

The Hague, Netherlands, Oct 14, 2019 – Advantech (TWSE: 2395.TW) today announced that its new [SKY-8101D](#) server has been verified as an Intel® Select Solution for NFVI Forwarding Platform (FP). Intel Select Solutions for NFVI FP expose the value of a NUMA-balanced |

**ADVANTECH**

### Solution Brief

Intel® Select Solution for NFVI Forwarding Platform  
2<sup>nd</sup> Generation Intel® Xeon® Processor Scalable Family

## Accelerating Forwarding Plane Performance

**Overview**

As Communication Service Providers transition from proprietary single-function networking elements to Network Function Virtualization Infrastructure (NFVI) they will begin to realize the transformational benefits of Software Defined Networking (SDN) where services become increasingly migrated into cloud-native workloads. Both new and legacy networking services and business policies can then be instantiated on-demand at the network edge in the form of software instances that are fully managed and orchestrated in the cloud.

In preparation for the widespread use of 5G and the broad array of services that will be sliced over the network, it is vital that newly deployed platforms based on Intel® Architecture (IA) take full advantage of Intel® Select Solutions for NFVI configurations in order to provide predictable performance and offer the throughput headroom needed by new and future services. More specifically, the key to network transformation success lies in the use of servers with NUMA-balanced I/O designs capable of accelerating data plane performance beyond that of traditional IT servers.

Advantech's SKY-8101D enables enhanced solutions that demand high performance and throughput:

- 4G or 5G core User Plane Functions (UPF)
- Broadband use cases, such as virtual Broadband Network Gateway (vBNG)
- Network services such as virtual Evolved Packet Core

# ADVANTECH

Visit [www.advantech.com/nc](http://www.advantech.com/nc)  
Advantech Intel® Select Solutions  
Resources

[www.advantech.com/nc/Spotlight/Intel-NFVI-FP](http://www.advantech.com/nc/Spotlight/Intel-NFVI-FP)  
[www.ucpe.tech](http://www.ucpe.tech)

