NETWORK TRANSFORMATION AT THE CUSTOMER PREMISES EDGE

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THE INTELLIGENT EDGE: INDUSTRY TRENDS

2005-2016

THINGS

NETWORK

STORAGE

COMPUTE

ANALYTICS

2017+

THINGS

STORAGE
COMPUTE
ANALYTICS

EDGE

STORAGE
COMPUTE
ANALYTICS

NETWORK CORE

STORAGE
COMPUTE
ANALYTICS

CLOUD

STORAGE
COMPUTE
ANALYTICS

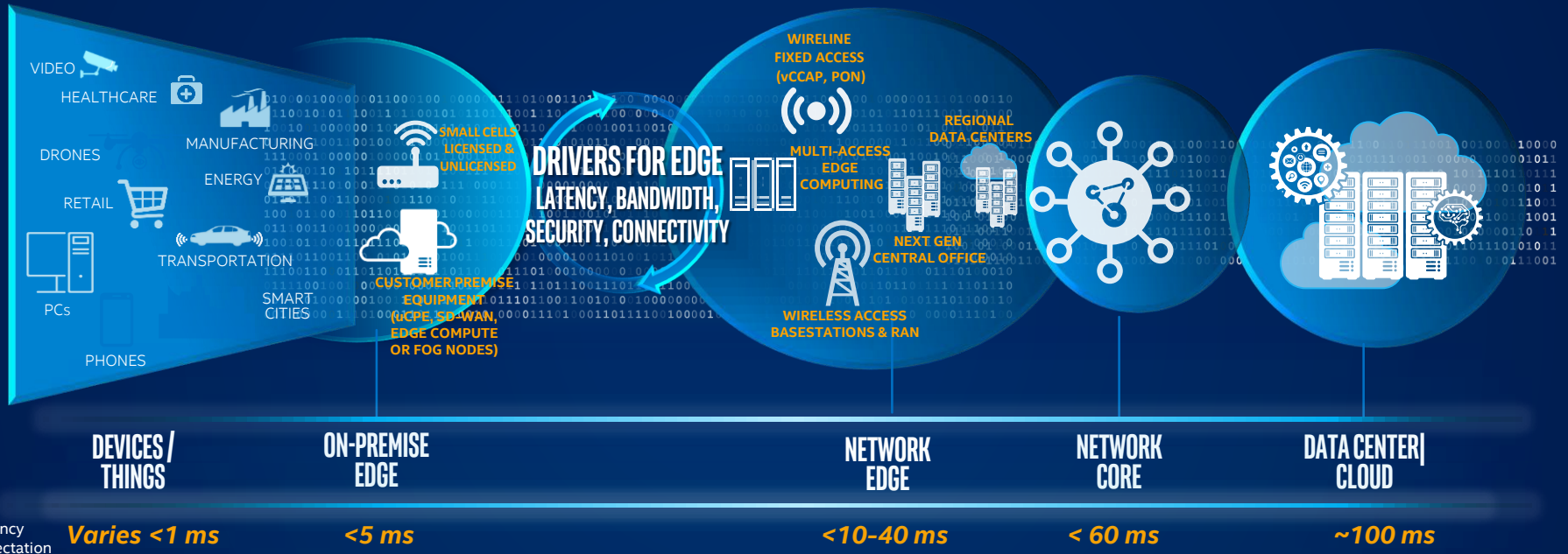
VIRTUALIZATION

STORAGE

NETWORK INFRA

AI/ANALYTICS

WORKLOADS DRIVING EDGE COMPUTING



Edge Services on different types of Edge Platforms –> On-Premises and In-Network

(uCPE, RAN, NGCO, Edge Compute Nodes, Multi-Access Edge Computing (MEC), and Regional Data Centers)

EDGE-UCPE AND IOT REFERENCE ARCHITECTURE

Enterprise IoT Edge

Remote Secure Provisioning

Intel® Technologies

Intel® SDO "Secure Device Onboard"

Enterprise/ Network Edge*

4 Network-Security Analytics — splunk>

3 VNFs — VERSA, nuagenetworks, FORTINET, paloalto, CISCO, velocloud Now part of VMware

2 NFVi OS — vmware, ADVA Optical Networking, ENEA, RAD, CISCO

1 uCPE HW — CISCO, CITRIX, DELL EMC, ADVANTECH, SUPERMICRO, NEXCOM, VERSA, vmware, Lanner, CASWELL

Intel® Technologies Portfolio

Available for driving optimized performance

OpenVINO — NEURAL COMPUTE STICK 2

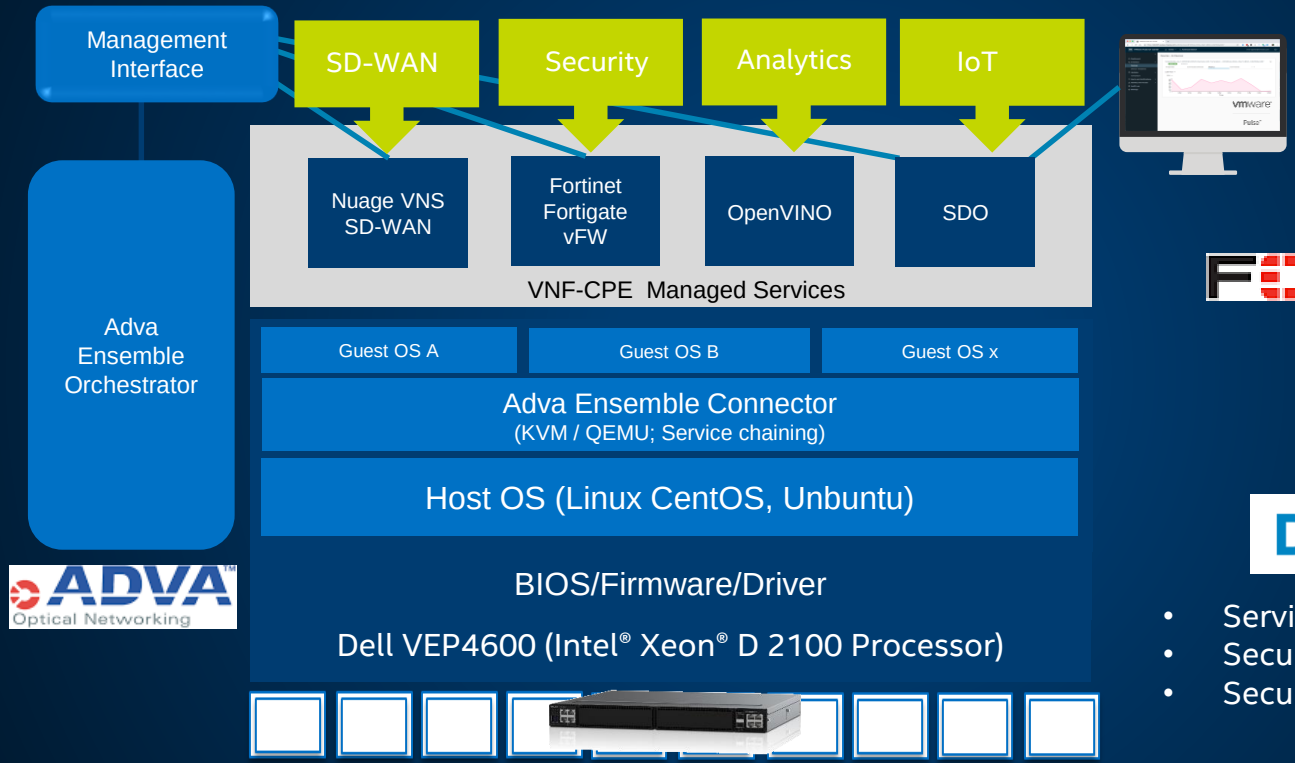
Intel® QuickAssist Technology — Hyperscan

OpenNESS — OPEN NETWORK EDGE SERVICES SOFTWARE — Intel® AES-NI

Intel® QuickAssist Technology — DPDK DATA PLANE DEVELOPMENT KIT

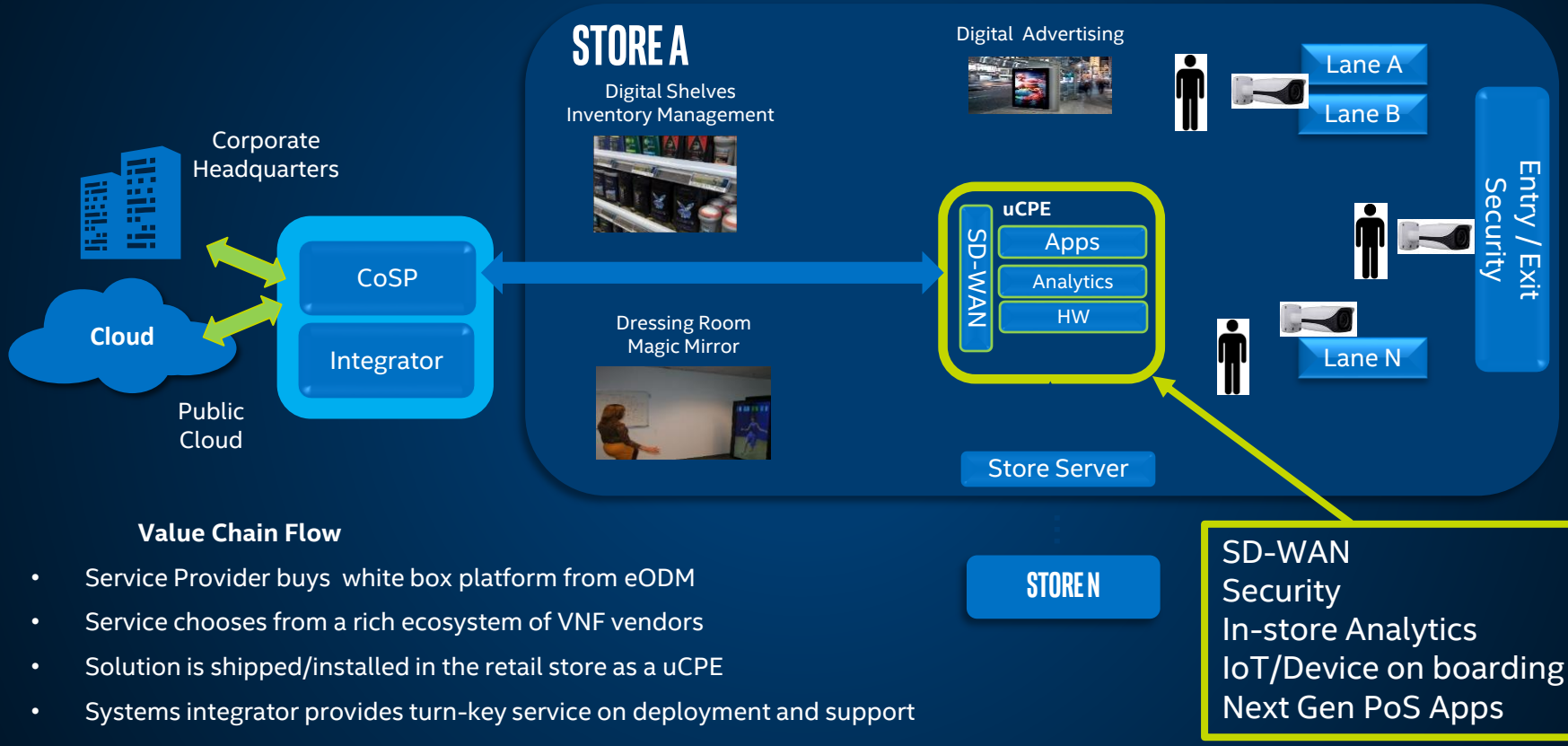
* Graphic shows just a sample of partners from a large fast growing ecosystem in each swim lane

SERVICE CHAIN EXAMPLE



- Service Insertion & Chaining
- Security Control & Orchestration
- Secure IoT Device Onboarding

DEPLOYMENT EXAMPLE: RETAIL



Value Chain Flow

- Service Provider buys white box platform from eODM
- Service chooses from a rich ecosystem of VNF vendors
- Solution is shipped/installed in the retail store as a uCPE
- Systems integrator provides turn-key service on deployment and support

INTEL® XEON® D2100 PROCESSOR
FOR CUSTOMER PREMISES EQUIPMENT (CPE)

INTEL® XEON® D-2100 PROCESSOR: NEXT-GEN CPE

4X More Memory Capacity	More Application Scale
Enhanced Intel® QuickAssist Technology	2.5X Faster Crypto Processing[6]
Enhanced I/O, PCIe*, MISO, Intel® Ethernet	Implementation Flexibility
1.125X More Processing Cores	More Virtualized Network Functions[5]

ENHANCED CAPABILTIES AND CAPACITY WITH LOWER TCO FOR SPACE-CONSTRAINED CPE SOLUTIONS

UP TO 2.9X
NETWORK PERFORMANCE IMPROVEMENT
COMPARED WITH INTEL® XEON® D-1500 PROCESSOR NETWORK SERIES[1]

New Intel® Xeon® D-2100 Processor
Intel's Fastest Low-Power Edge Processor

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors.

Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information visit www.intel.com/benchmarks.

INTEL® XEON® SCALABLE PROCESSORS WITH INTEL® QUICKASSIST TECHNOLOGY (INTEL® QAT)

F5 Networks
Virtual Gi-LAN Firewall (TLS)

2.4x
Throughput 6230N+QAT vs 6230N

Fortinet Fortigate
Virtual Next-Gen Firewall

3x VPN
Throughput 6230N+QAT vs 6230N

Nokia Nuage
Virtual Network Services Gateway

2x SDWAN
Throughput 5218N+QAT vs 5118

Performance results are based on testing as of dates shown in configuration and may not reflect all publicly available security updates. See configuration disclosure for details. No product or component can be absolutely secure. Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information visit www.intel.com/benchmarks.

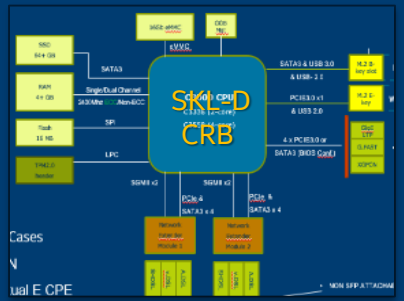
INTEL® SELECT SOLUTION FOR UCPE: PRODUCT READINESS

OEM/ISV ECOSYSTEM

Check Point SOFTWARE TECHNOLOGIES LTD · JUNIPER NETWORKS · paloalto NETWORKS · riverbed · CISCO · VERSA NETWORKS · silver peak · velocloud · FORTINET · CLOUDGENIX

...and more

INTEL



Benchmark Report for Intel

INTEL® SELECT SOLUTION FOR uCPE

paloalto NETWORKS · VERSA NETWORKS · silver peak

3rd party VNF examples

ADVANTECH · CASWELL · Lanner · Silicom Connectivity Solutions · SUPERMICRO

Customer Collateral

ENTERPRISES & SERVICE PROVIDERS

USE TOP-BOTTOM SCALABILITY, ARCHITECTURAL CONSISTENCY, AND ECOSYSTEM PARTNERSHIPS AGAINST LOW-END ARM COMPETITION

FAST GROWING ECOSYSTEM OF PARTNERS

Optimized to Intel Architecture

SUMMARY

- Intel is investing to drive Network Transformation
- Comprehensive suite of products and technologies that enable differentiated Edge solutions
- Rich ecosystem of uCPE/Edge vendors and technology partners to deliver best in class products

Notices & Disclaimers

Performance results are based on testing as of the date in the configurations and may not reflect all publicly available security updates. See configuration disclosure for details. No product or component can be absolutely secure.

1 – Up to 2.9X performance improvement with Intel® Xeon® D-2187NT processor compared with previous generation Intel® Xeon® D-1553N processor on web server throughput with integrated Intel® QuickAssist Technology (Intel® QAT). Configuration and workload details: NGINX webserver: 1-Intel® Xeon® D-1553N Processor (12M, 2.30 GHz) Platform: Echo Canyon, 4x8GB(32GB 2400MHz Samsung* M494A1G43DB0-CPB) ,OS: Ubuntu* 16.04.2(4.4.0-21) ,Benchmark: NGINX (1.9.6*)-Webserver Throughput Intel® QAT (ECDHE-ECDSA Max Performance), Compiler: NA,BIOS: BIOS :GNVDINT1.86B.0010.D22.1611201908, Storage: NA," Network Device: 2x Intel® Ethernet Controller X710 (4x 10G/card), Network Speed: NA, Intel® QAT version: 1.0.3-42, Score: 15.7. compared to 1-Intel® Xeon® D-2187NT Processor (22M, 2.0 GHz) Platform: Yuba City, 4x16GB(64GB 2666MHz Micron* 36ASF2G72PZ-2G6B2) ,OS: Ubuntu* 17.10(4.13.0-21-lowlatency) ,Benchmark: NGINX(1.10.3)-Webserver Throughput Intel® QAT (ECDHE-ECDSA Max Performance), Compiler: NA,BIOS: BIOS :BKVDTRL1.86B.0005.D08.1712070559, Storage: NA," Network Device: 4x Intel® Ethernet Controller X710DA2 (2x 25G/card), Network Speed: NA, Intel® QAT version: 1.0.3-42, Score: 46.8

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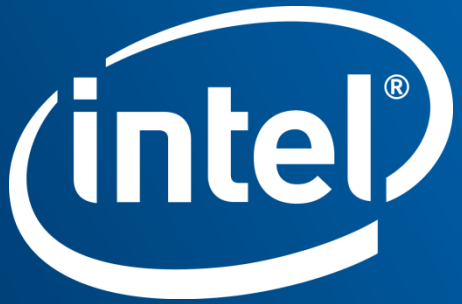
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