



# Edge Cloud

## Postcards from the (far) edge

2020 Update

The Internet, October 2020



# 2020 Update

## Market and Technology

### Enterprise

- Taking the lead

### Service Providers

- Competition
- Typical Deployment

### Technology

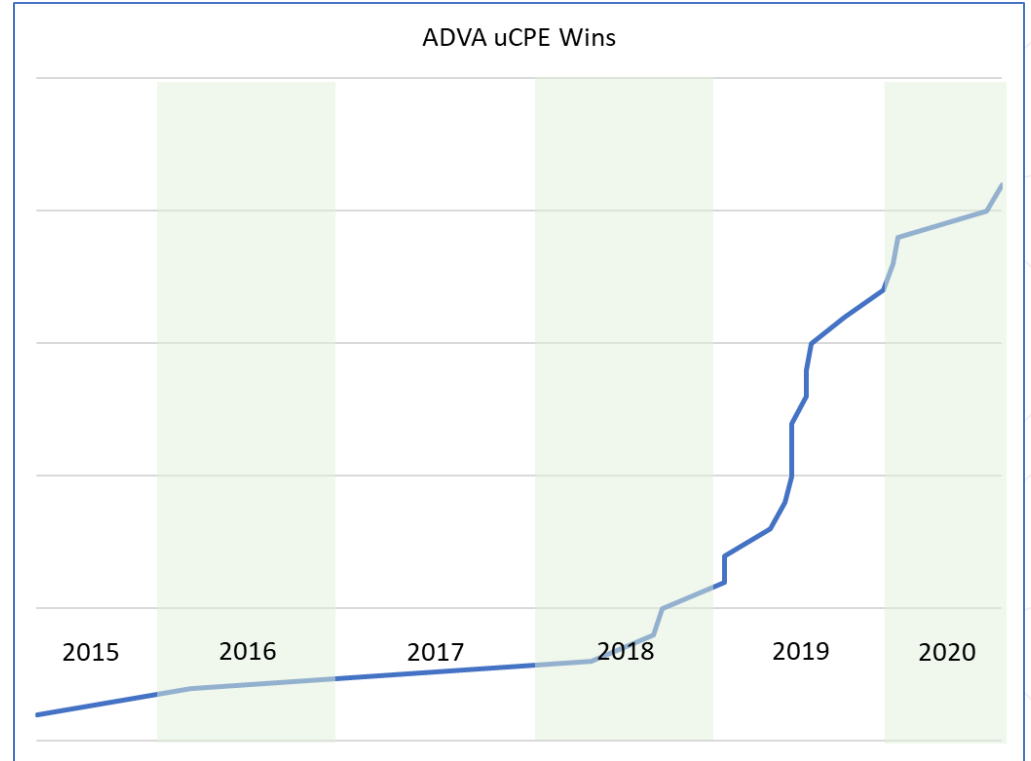
- Cloud Native
- Hardware Acceleration
- Mobility Deployments



Model is set, adoption accelerating

# NFV rollouts are accelerating... (again)

- The NFV/uCPE market has passed through the trough of the hype cycle
- Growth stalled during Covid lockdowns, but came back strong in the summer
- Enterprises direct sales are rivalling managed services



# uCPE typical deployment

## Customer App

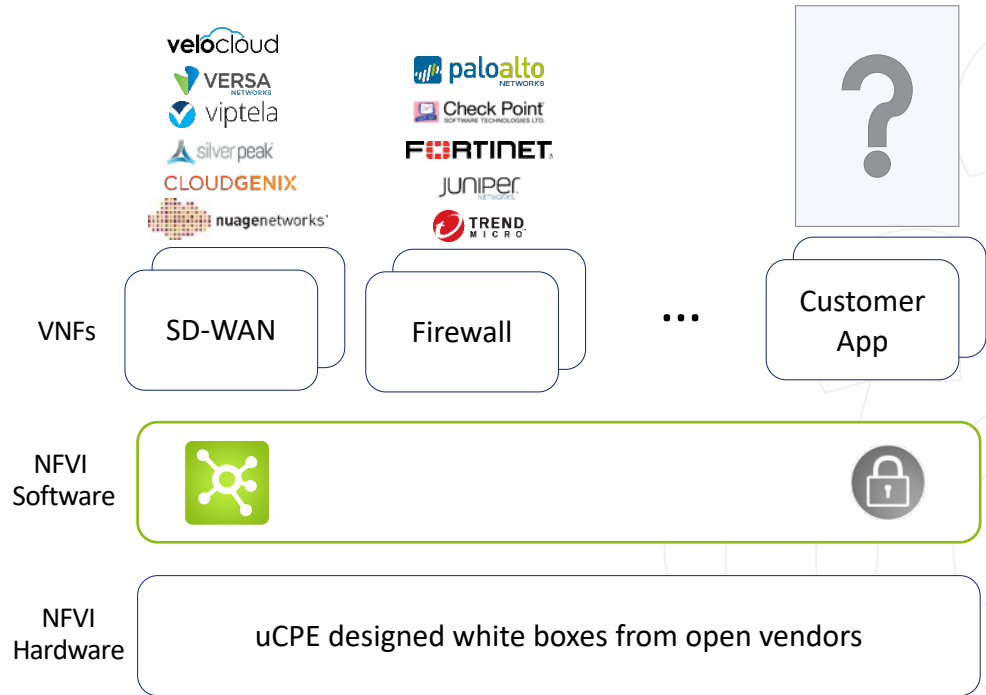
- Tenancy is a must have
- Typical “app” is containerized

## SD-WAN

- Major vendors will take appliance sales where possible
- A few will fight for it
- All will play open if forced

## Firewall

- Low end of market is flexible
- High end is rigid
- Some blurring of lines with SD-WAN



Customer applications have become the leader

# Enterprise (and government) demand growing

## CIO value proposition

- Appliances are lock-in
- Maintenance schedules are murder
- A managed compute platform is a win

## Enterprises are actively *closing* deals

- Appear through multiple operators
- Appear through SI's and resellers



Distribution model is the key topic today

# Service Provider: multiple providers per market

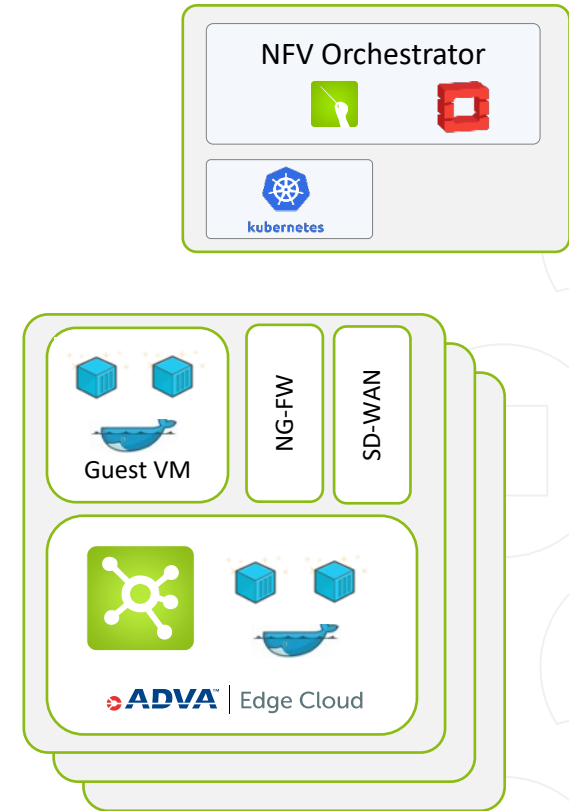
- Enterprises can now find multiple service providers per market
- uCPE is being taken to single VNF deployments
- Three key drivers
  - Logistics/Inventory savings
  - Management consistency
  - NFVi functionality
- HW Cost opening up new markets
  - DRAM prices have dropped
  - Volume benefits flowing



The model is established in all major markets

# Cloud native at the far edge

- Commercial uCPE VNFs are not currently container-friendly
- Demand exists for two different container operational models:
  - Native container applications hosted within NFVI
  - Guest containers hosted by a VM running on NFVI
- Both models have unique value propositions
- These operational models can be service chained with each other, and with traditional VNFs, and orchestrated with OpenStack or Kubernetes



Cloud native at the far edge is a hybrid story

# Secure access service edge (SASE)

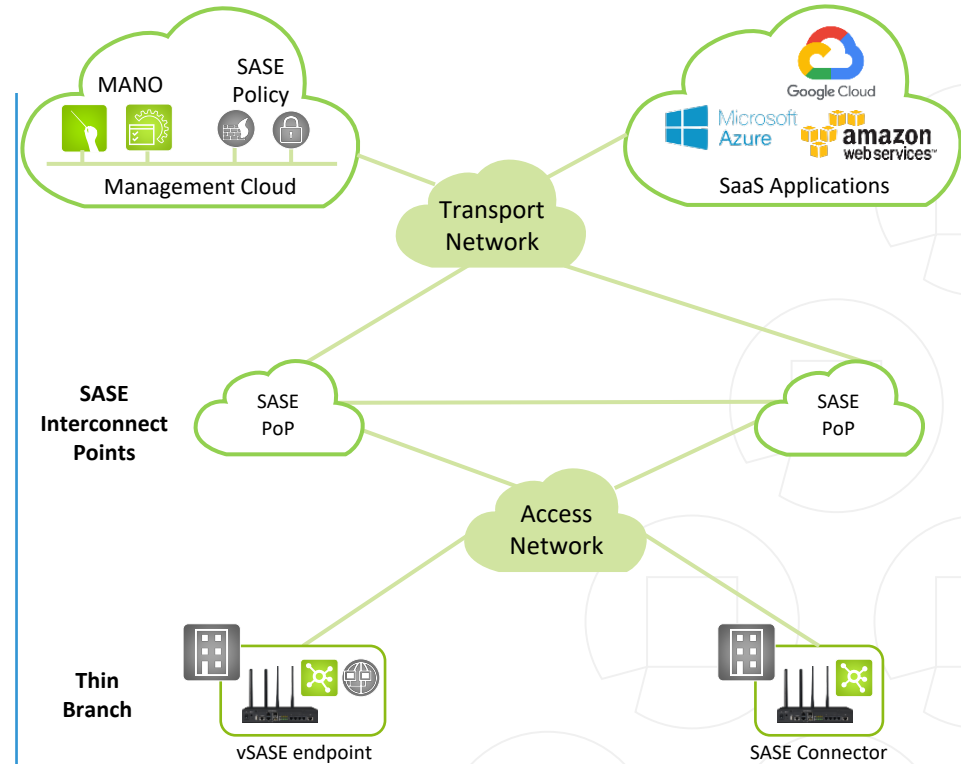
## Ensemble use case

### Drivers for SASE

- Most enterprise workers accesses applications outside of the corporate data center
- Inefficient to require corporate VPN to access SaaS applications
  - Forces all traffic to be routed into a corporate data center for inspection and security treatment

### Benefits of SASE + uCPE

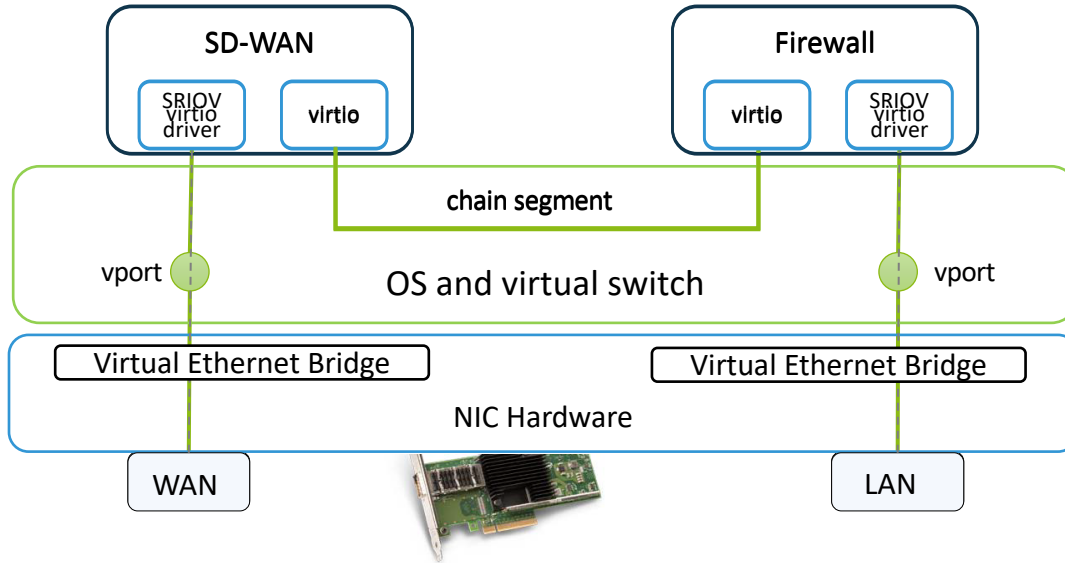
- SASE combines network security functions (SWG, CASB, FWaaS and ZTNA), with SD-WAN capabilities
- SASE does not eliminate need for non-networking IT workloads at customer premises
- uCPE and virtualization infrastructure can host virtualized SASE endpoints or become a SASE endpoint itself.



Provides secure, direct access to enterprise SaaS applications

# Hardware acceleration

## SR-IOV support



- Hardware acceleration now appearing in uCPE solution
- Applicable to N-S and E-W traffic
- Adoption by VNF vendors is the current wave
- 3-5x throughput improvements visible

Improves end-to-end throughput without increasing platform footprint

# Evolution of mobile network: Neutral Host

RAN densification

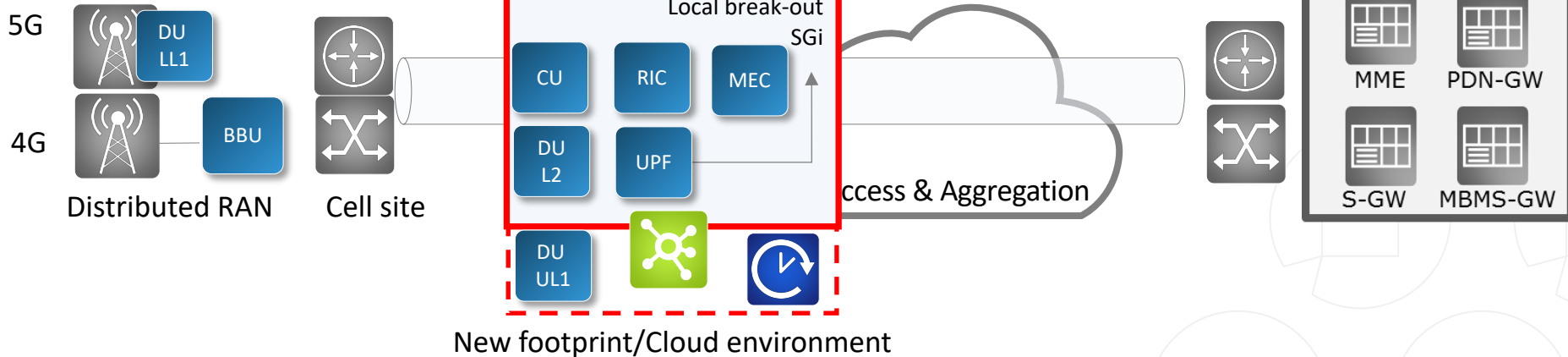
Mass small cell deployments drives  
BBU consolidation

Centralised/Virtualised RAN &  
Distributed EPC (UPF)

Backhaul economics and application  
latency drive EPC distribution

Centralised-RAN

Wholesale mobile services



Access Bandwidth  
1 / 10 / 25 Gbit/s

Latency  
<10ms

Synchronization  
<<1.5us (65ns)

# Summary

## Round 1 is over

- Operators are past the questions and winning deals
- Gray Box solutions are net negatives in the end market
- Architecture matters

## Round 2 is underway

- Enterprise adoption is rivalling service providers
- Multiple SP's per region are offering uCPE solutions
- Technology innovation accelerating



Model is set, market is moving ...



# Edge Cloud

Thank you

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