

September 7, 2017

Service Provider Edge Computing Use Cases & Ecosystem Challenge Areas

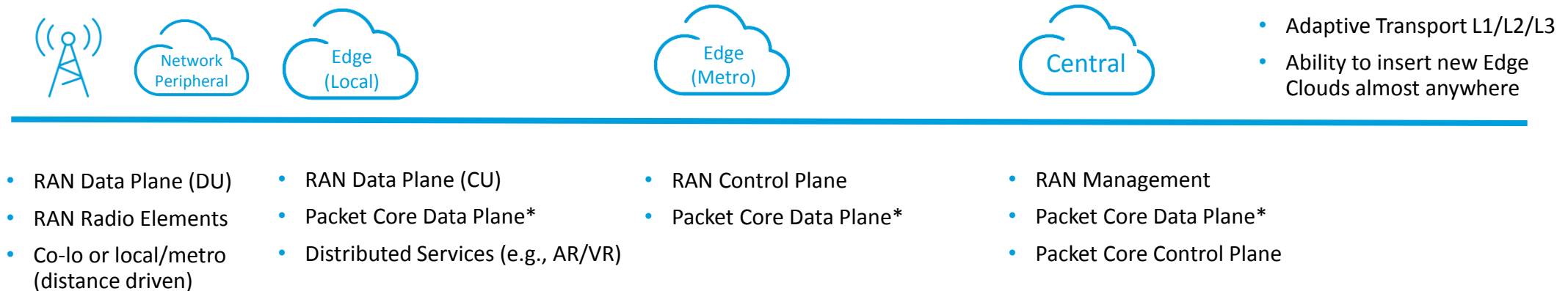
Steven Nurenberg
Distinguished Member of Technical Staff
AT&T Labs



Use Case - Wireless

- Mobile Infrastructure is becoming more disaggregated and virtualized with both distributed and centralized (pooled) elements
- Edge Computing (EC) will be used to host RAN and Packet Core virtual network functions
- Distributed Services can be co-located at EC for low latency or local break out

Open Network Automation Platform (Common Cross-Platform Orchestration)



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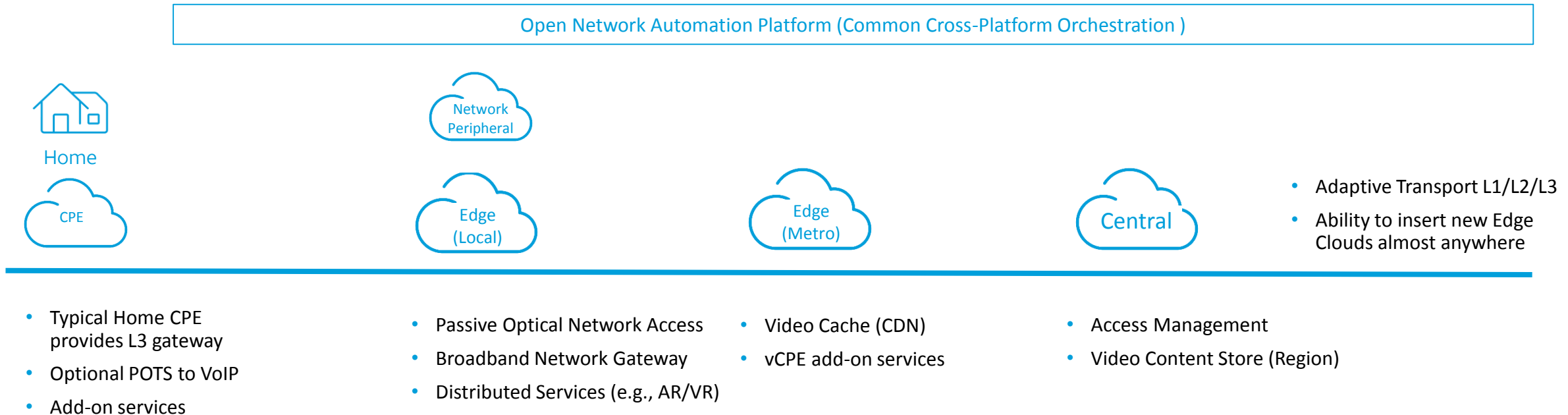


* Packet Core Data Plane at multiple tiers associated with service locality requirements – Tier selection via APN or Network Slicing



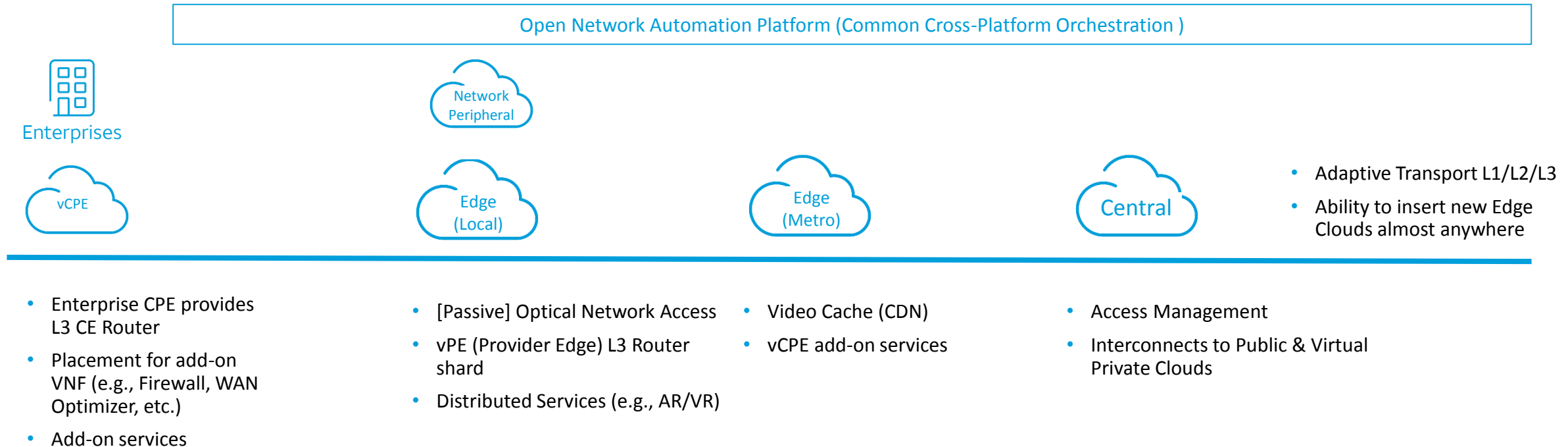
Use Case – Wireline Consumer

- Converged consumer service (broadband Internet, OTT/IPTV, VoIP) on L3 access
- Virtualized infrastructure located both at the premises (CPE) and network
- Total volume is dominated by video



Use Case – Enterprise

- Converged enterprise service split between vCPE and Network
- Enterprise access agnostic connectivity across broadband internet, Ethernet & wireless
- Service flexibility and reliability is a key requirement



Use Cases - Themes

- Video dominates volume – Optimized infrastructure critical
- Growth of IoT (5G mMTC) creates new infrastructure challenges – Quantity of devices, networking signaling, new network traffic characteristics
- Network infrastructure separation mechanisms evolving – Network slicing to associate resources with specific use cases
- Automation critical across design, build, and operate – Entire lifecycle (birth to death) must be fully automated and work across functions & layers
- Emergent use cases must be easy to trial and scale – Dynamic allocation of resources including the ability to pull back workloads from local to metro to regional if latency tolerance permits



Ecosystem Challenge Areas for Openstack

Efficient Configurations

- Support for small scale deployments (1/2 rack, vCPE single box) with low overhead
- Ability to use VM or Container based VNF

Hardware Abstractions

- Ability to effectively change hardware without re-building binaries (VOLTHA)
- Ability to automatically and effectively use specialty hardware (GPU, FPGA)

Network Stack

- Support for direct (SR-IOV/Pass-Through) and mediated “overlay” networking
- Efficient for VNF, de-coupled from hardware, and with support for L2 & L3 SP semantics

Operational

- Effective split between local and remote components
- Ability to operate when disconnected from rest of network with graceful re-connect
- Effective inter-operation of platform components with ONAP

Distributed Services Support

- A common sand-boxed execution environment that allows for running services at the edge

