ADVA Edge Cloud

Making Edge Cloud a reality

Delivering services today and driving innovation for CSPs

September 2019 – Prayson Pate – CTO, ADVA Edge Cloud





Edge Cloud overview

What is it, and how do we build it?

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Reminder: why are cloud principles important at the edge? It lets us do things we couldn't otherwise do!

- Consistency: We can build a uniform cloud infrastructure from data center all the way to the edge
- **Evolution**: We can add capabilities with software upgrades both OS and apps
- **Networking**: We can support communications applications such as virtual network functions (VNFs) implementing SD-WAN, firewalls, virtual test agents, etc.
- Consolidation: On the same node, we can also support user applications e.g. microcloud
- Choice: We can pick the best of breed servers and applications for our use case
- Cost: We can utilize commercial models such as pay as you go

We need to keep these in mind to achieve the benefits of the cloud



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What is Edge Cloud?

Edge Cloud is the delivery of cloud resources (abstracted, connected, managed) to the perimeter of the communications network (customer site, cellular access point, and access network) and the usage of those resources for both standard compute loads (micro-cloud) as well as for communications infrastructure (NFV, uCPE, CORD, MEC).



How do we build a data center cloud with OpenStack?

OpenStack architecture:

- Multiple nodes for network, compute and storage, each with agents
- Managed by controller node ٠

Pros: scalable, modular, open, flexible **Cons**: lots of nodes

We need to rethink this model for the far edge, which may have only one node





How do we build Edge Cloud with OpenStack?

- 1. Squeeze the controller, compute, storage and networking into a single node
- 2. Add operational capabilities such as zero touch provisioning and software management
- 3. Add networking capabilities such as layer 2 Carrier Ethernet and LTE



Pop quiz – do you know your OpenStack logos?





Does Edge Cloud with OpenStack meet our goals? Yes!

- Consistency: We can build a uniform cloud infrastructure based on OpenStack, already in use from data center all the way to the edge
- Evolution: We can start with VMs and move to containers. Also, OpenStack is constantly adding new features
- Networking: OpenStack supports dynamic loading of networking applications
- Consolidation: VMs and containers don't care what is running inside
- Choice: OpenStack and Linux are available on a wide variety of COTS servers
- Cost: VNFs suppliers are working with CSPs to support PAYGO and try-beforeyou-buy models

We are now ready to leverage the cloud!



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Edge Cloud is happening today!



What does it mean for us?







Edge Cloud applications

Now that we have an Edge Cloud, what can we do?



Edge Cloud use case: Enterprise micro-cloud

Enables hybrid cloud and multi-cloud on Edge Cloud platform

- Open cloud-native environment supports VMs and containers
- User can move compute loads between end node and cloud

Operator-managed platform – new revenue opportunity

- No need for end user to install and maintain servers
- Micro-cloud offered in conjunction with communications services
 - SD-WAN, firewall, IDS/IPS, etc.

User-managed applications

- User can make use of hybrid cloud for managing workloads based on cost, latency and bandwidth
- Can also consolidate applications and eliminate old low-usage servers e.g. database, CRM, point of sale



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Edged cloud enables delivery of managed micro-cloud along with communication services



Edge Cloud use case: Enterprise micro-cloud



Edge Cloud use case: Store of the future



Edge Cloud use case: IoT gateway

uCPE-oriented IoT

Both managed and enterprise-owned deployments requiring co-residency of IoT applications for local processing

Industrial IoT Partnerships

Edge Cloud applications focus on solutions involving large medical and industrial players, opening direct partnership opportunity

Public IoT Infrastructure

Jurisdictions with shared infrastructure require costeffective VLAN and IPv6 capable networking solutions



IoT deployment requires multifunction, IPv6, multi-VRF, and VLAN capabilities





Edge Cloud use case: 5G / Next Gen Central Office





Edge Cloud evolution and summary

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Summary

- Edge Cloud supports **today's** services and **tomorrow's** innovation
- We need the best of the cloud from the data center: **openness, choice and a software-centric view**
- But we need more than data center technology: we also need efficiency, networking and operations

Operators and enterprises are deploying Edge Cloud today – you can too!



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Thank you

ppate@advaoptical.com



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