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AT&T Edge Computing Strategy and OpenStack's Role in It

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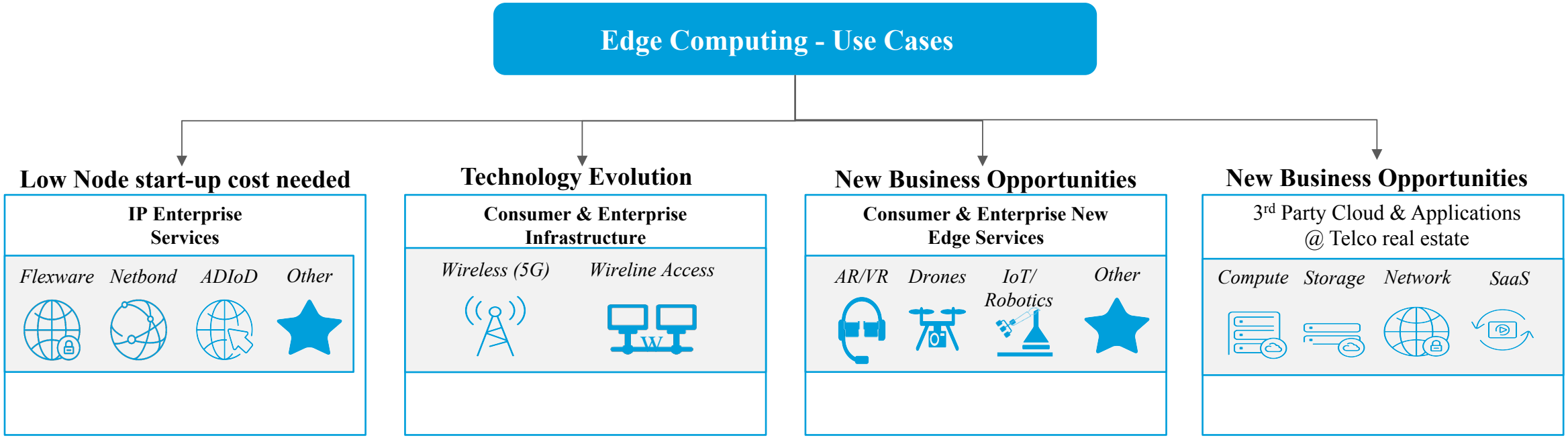
Edge Computing (EC) – Telco drivers

EC **Edge** computing is a method of optimizing **cloud** computing systems by performing data processing at the **edge** of the network, near the source of the data.



- **Quality of Experience (QOE) -** The reduction in latency and more efficient utilization of network capacity
- **Right Content at the Edge could reduce backhaul traffic** – Data from the edge is processed at the edge
- **Decompose and dis-aggregate access function** – Flexible with modularity and loose coupling of both Hardware and Software
- **Better Network Resiliency** – Ability to deploy cluster between Edge Data Center allowing for shared restoration of capacity

Edge Computing - Placement

Placement varies depending upon the use case, latency, space availability, etc.,

Device* **~2 ms** | **Last mile network*** **<5 ms** | **Access*** **1-3 ms** | **Edge computing** **~5- 20 ms** = ***Total latency need to be <20 ms for immersed AR/VR experiences***

Edge | **Centralized**

Customer devices

- Mobile
- AR/VR end user
- Drones
- Autonomous Vehicles

Customer Premises

- EC
- Home
- Smart Cities
- Small Enterprises
- Stadiums
- Enterprises
- Public buildings

Access Network

- EC
- EC

Telco Real estate & Network Edge
(Central Offices, etc.)

- EC

- **Centralized and/or EC**

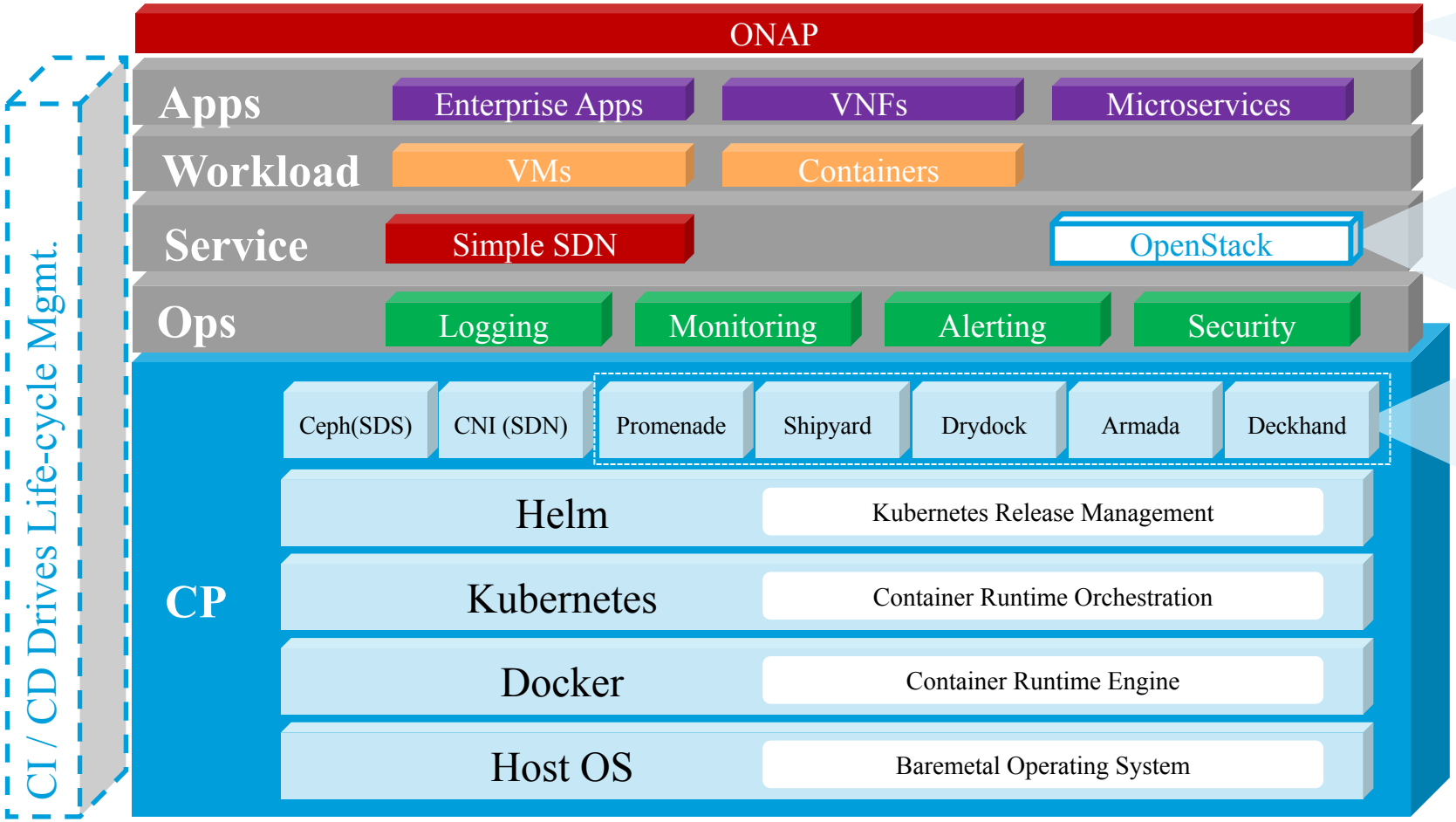
Millions | **Thousands** | **Tens**

* - Approximate

Open Network Automation Platform (ONAP) can provide seamless automation across Edge Cloud and Centralized Cloud

Edge requires flexible architecture that can evolve as technology evolve

OpenStack based Edge Architecture



Common orchestration across data center and edge

Open Network Automation Platform

Runtime Platform (Minimum set for Edge)

Nova *Compute*

Neutron *Networking*

Horizon *Dashboard*

Keystone *Identify Service*

Glance *Image Service*

Cinder *Block Storage*

Build & Deploy (Full Automation)

Full Automation Stack – AT&T developed and contributing to Open Stack and CNCF

VNF Networking (initial set)

OVS *Network Controller*

DPDK *NW Performance*

SR-IOV *NW Performance*

CNI *Container Networking*

Economical | Zero touch provisioning | Thin control

Full Automation Stack – AT&T developed and contributing to Open Stack and have plans to contribute to CNCF

Demo was based on these Open Source

Under cloud Control Plane Repositories

Promenade - A deployment framework for resilient, self-hosted bootstrapping of a Kubernetes cluster ***https://github.com/att-comdev/promenade***

Shipyard - A workflow engine to execute a graph of deployment activities ***https://github.com/att-comdev/shipyard***

Drydock - A pluggable orchestrator to translate a YAML host topology into a provisioned set of host ***https://github.com/att-comdev/drydock***

Armada - An orchestrator for installing, upgrading, and managing a collection of Helm chart ***https://github.com/att-comdev/armada***

Deckhand - A foundational python REST YAML processing engine providing data and secrets management to other platform services. ***https://github.com/att-comdev/deckhand***

OpenStack Helm Repositories

https://github.com/openstack/openstack-helm

https://github.com/openstack/openstack-helm-addons

https://github.com/openstack/openstack-helm-infra

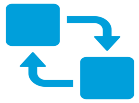
Support these Open Source projects for community benefit !

OpenStack for Edge Computing!

Community to recognize EC as No.1 goal – Address broader Edge Use cases

Zero-Touch provisioning is key – No human touch install and upgrade of OpenStack

Support massive scale– Thousands of locations.



Support modular deployment – Only deploy needed components

Support new technologies faster (Edge enablers)– GPU, FPGA, NPU , etc.,

Support integration with other Edge Technologies – Containers, ONAP, etc.,

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