Open Technet Summit 2019

Cloud Native Infrastructure Innovation

: Treat Your Infrastructure Like Cloud Native Services

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- OpenStack Foundation User Committee Member
- OpenStack & Kubernetes 한국 커뮤니티 운영진

Collaboration Without Boundaries

Technology is a powerful force for changing our lives

Collaboration among individuals is a powerful force for changing our lives

Open collaboration around technology is a powerful force to understand and change our lives and our world

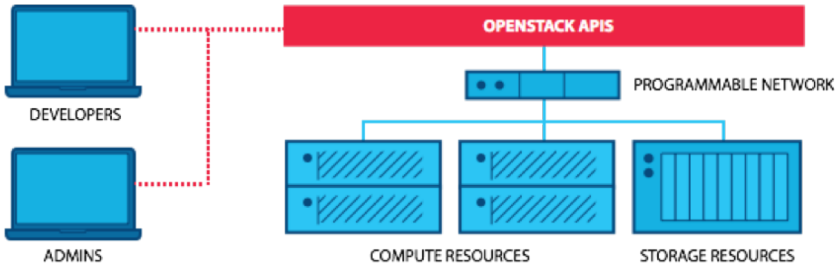
Next generation of cloud

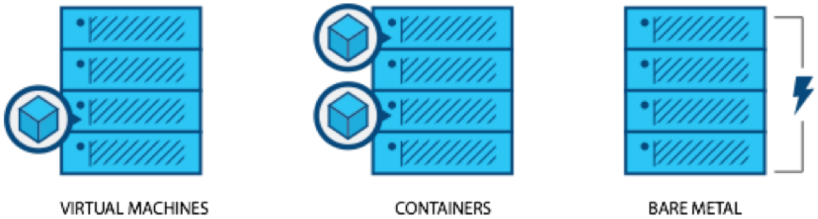
- Composable and cloud native
- Deployed across multiple cloud environments
- Virtualized compute, storage, networking, incorporation bare metal and containers
- Better technology makes adoption possible for more organizations and smaller teams
- Open Infrastructure – choice, integration and innovation ahead of the hyperscale market

Open Source Software in Cloud “Native” Infrastructure

OpenStack Introduction

OpenStack은 대규모의 Compute, Storage, Network, Container, Baremetal 리소스들을 제어하고, 이를 API 형태로 제공 가능하게 하는 오픈소스 SW 기반의 **클라우드 인프라 플랫폼** 이다.



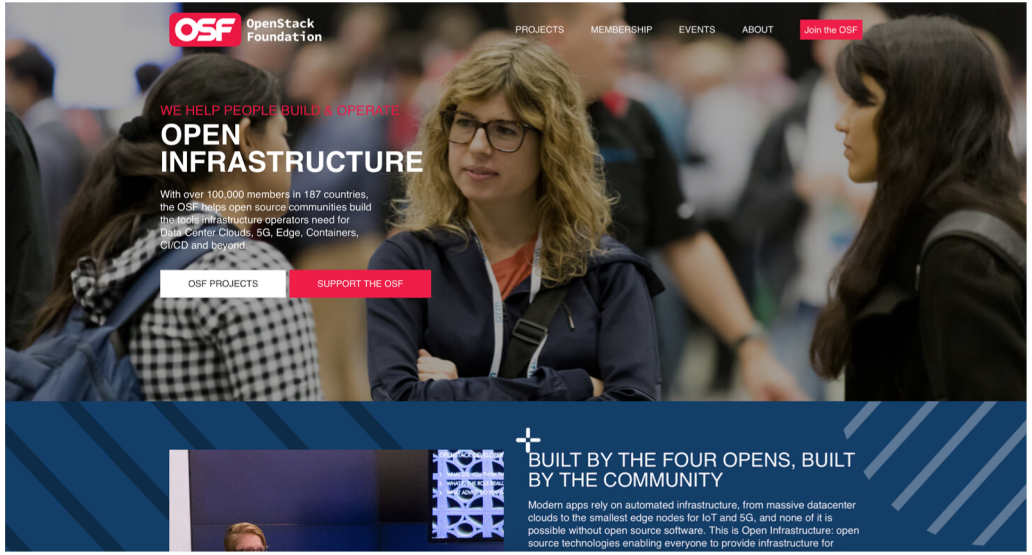


OpenStack Introduction

100,000
MEMBERS

187
COUNTRIES

675
ORGANIZATIONS



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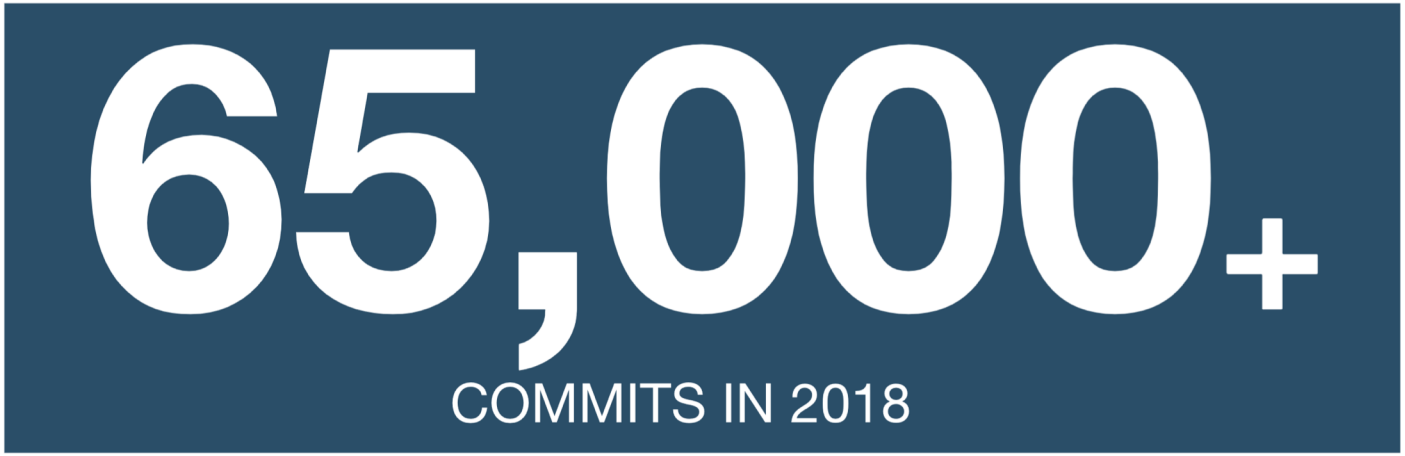
OpenStack Introduction



Average of 155 commits/day during Stein cycle

(Only 3 projects achieve this level of activity: OpenStack, Linux kernel and Chromium.)

OpenStack Introduction

Bexar - Cactus - Diablo - Essex - Folsom - Grizzly - Havana - Icehouse - Juno - Kilo - Liberty - Mitaka - Newton - Ocata - Pike - Queens - Rocky - Stein

Cloud Native Computing Foundation

- Cloud Native Computing 은 microservice로 앱을 배포하고, 컨테이너별로 패키징하고, 리소스 사용량을 최적화하는 스케줄링을 위해 오픈소스 소프트웨어를 사용

Container orchestration

Monitoring

Service mesh

Service discovery

Container runtime

Package manager

Tracing

Logging

Remote procedure call

Container runtime

Networking API

Security

Software updates

Storage

Distributed tracing

Service bus

Service mesh

Storage

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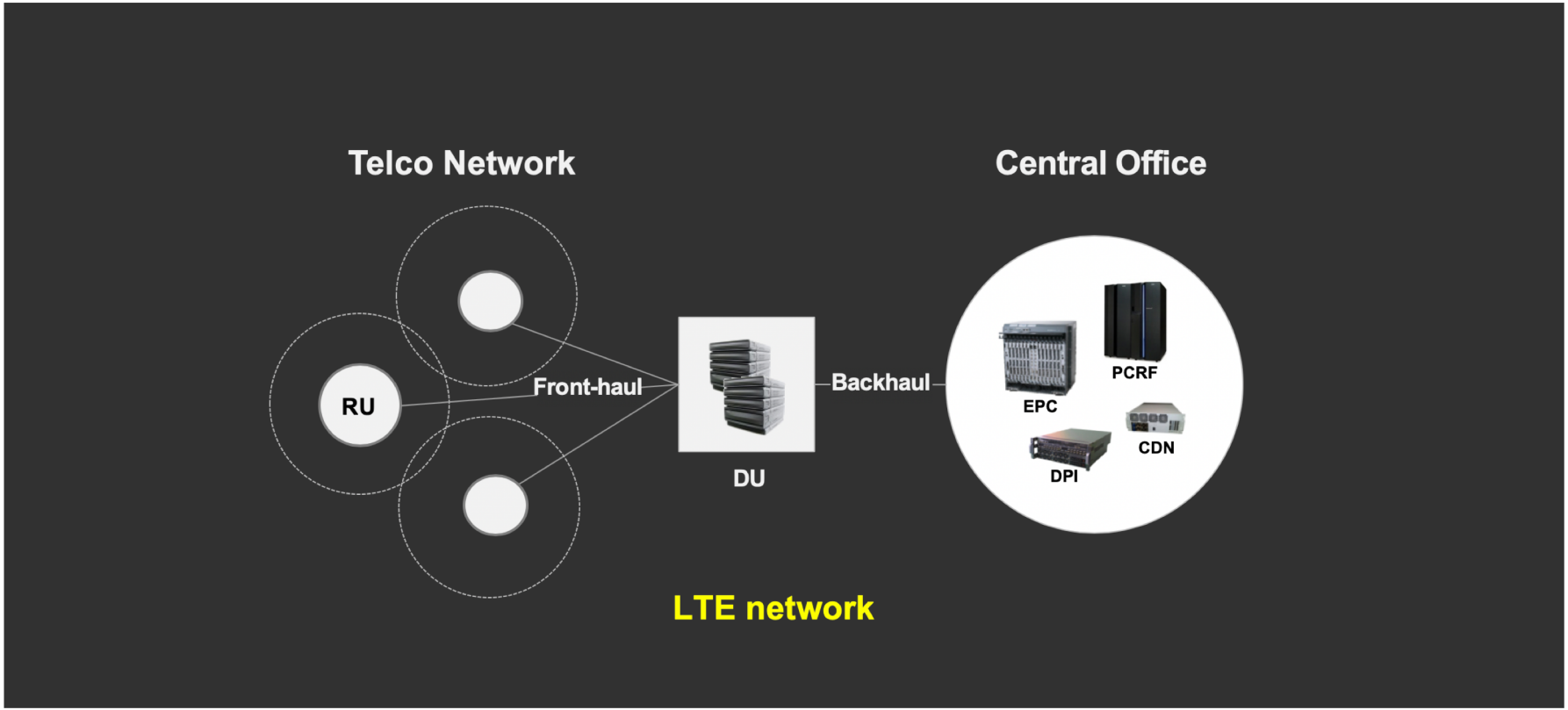
Kubernetes

Kubernetes 는 컨테이너화된 Application들에 대한 Deployment, Scaling, Management를 자동화 해주는 플랫폼

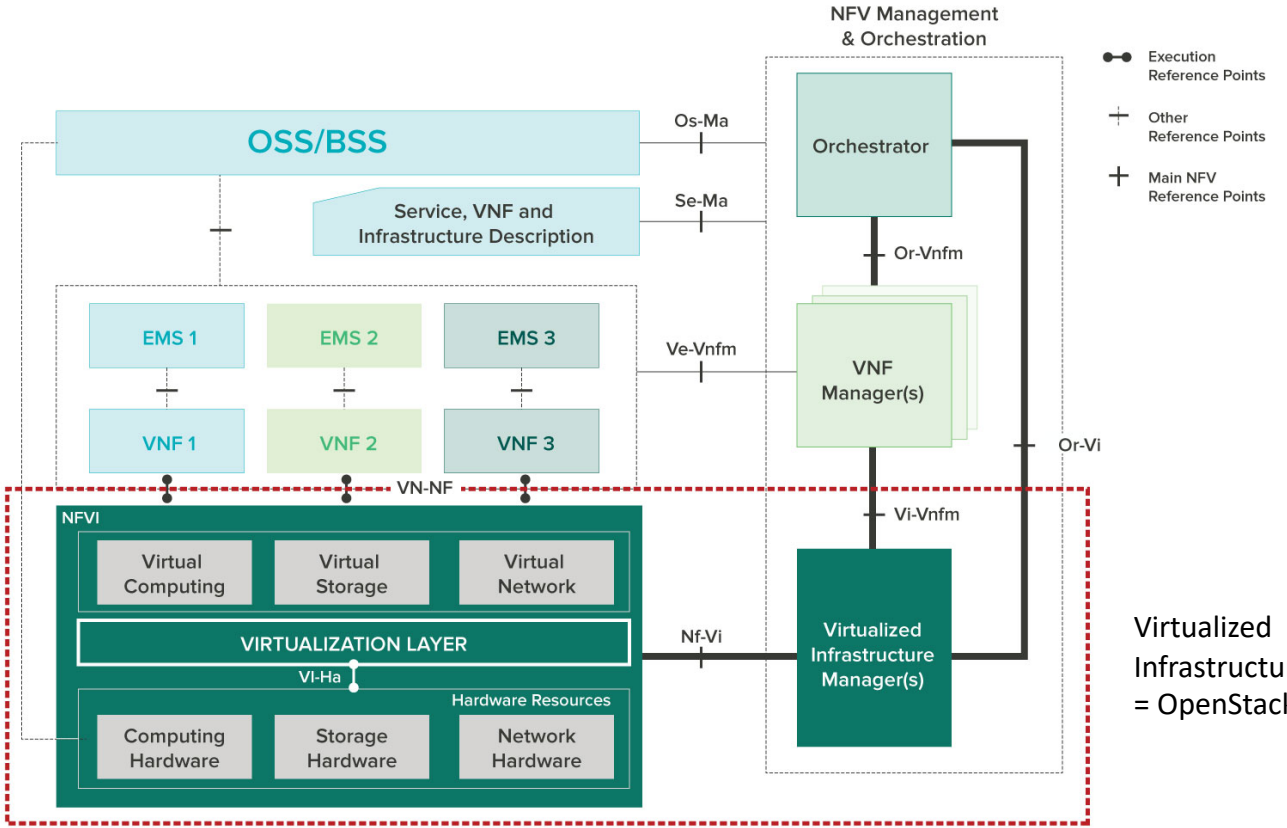
- Known as the **linux kernel of distributed systems**.
- **Abstracts away the underlying hardware** of the nodes and provides a uniform interface for workloads to be both deployed and consume the shared pool of resources.
- Works as an engine for resolving state by converging actual and the **desired state** of the system.

Telecommunication & Cloud Computing

Telco Network Evolution: LTE



Telco Network Evolution: NFV



NFV

Network
Function
Virtualization

VNF

Virtualized
Network
Function

Virtualized
Infrastructure
= OpenStack

https://www.opnfv.org/wp-content/uploads/sites/12/2016/11/opnfv_diagram_final.jpg

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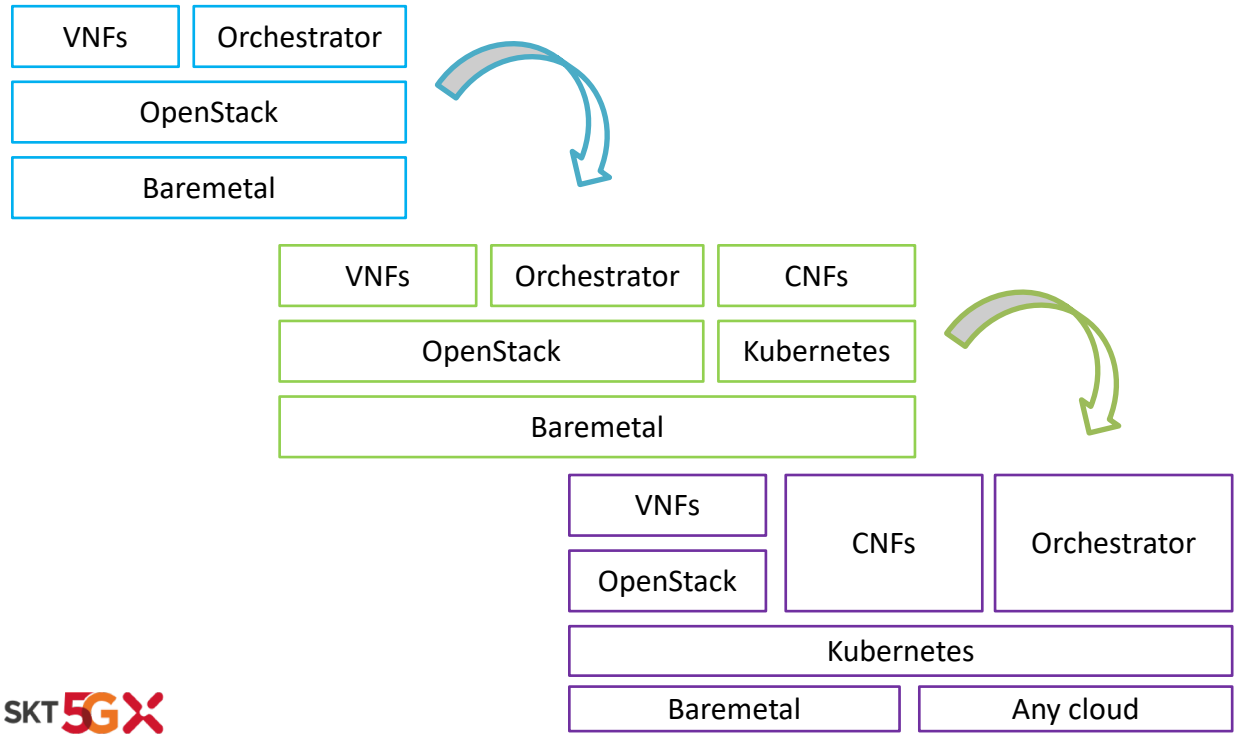
Telco Network Evolution: CNF

Evolving from VNFs to Hybrid



NFV

Network
Function
Virtualization

CNF

Containerized
Network
Function

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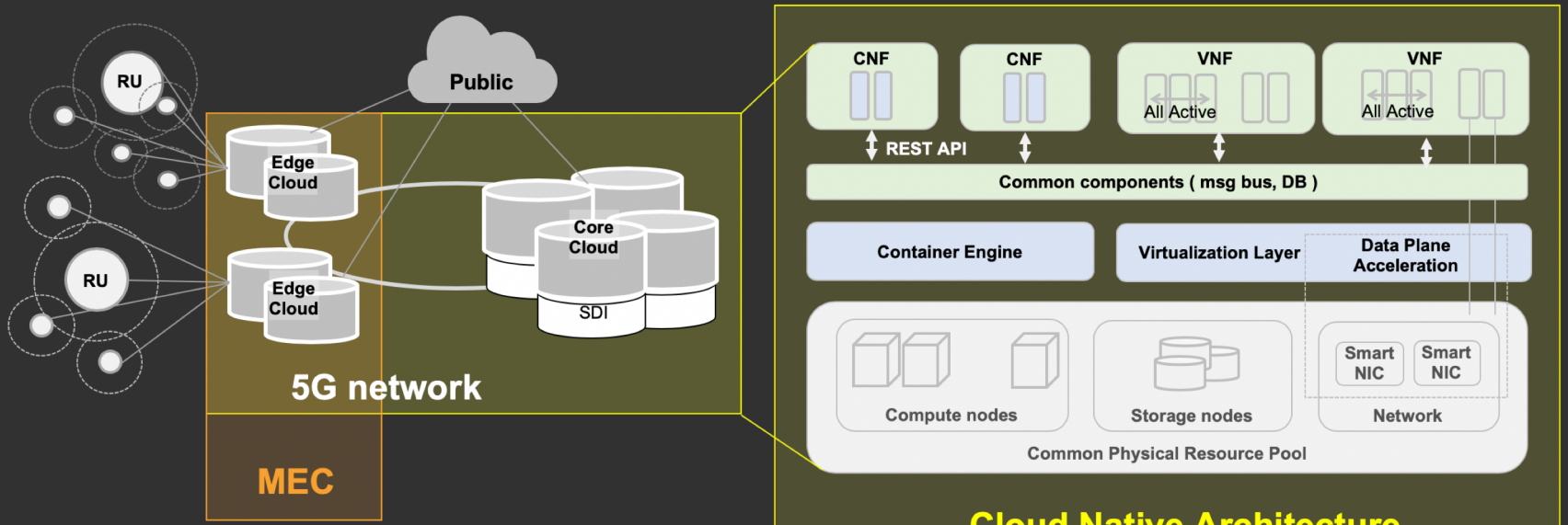
Telco Network Evolution: Cloud Native Infrastructure

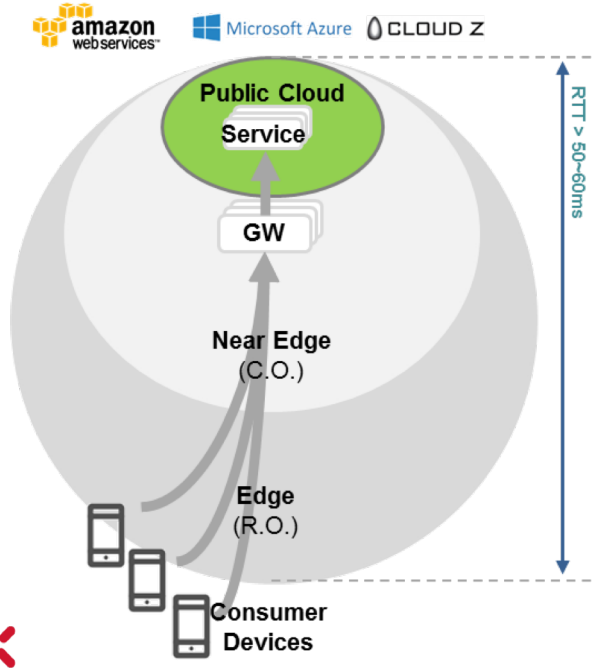
In 5G cloud moves to edge and is run with cloud native architecture



Telco Network Evolution: MEC

Cloud Computing (LTE)

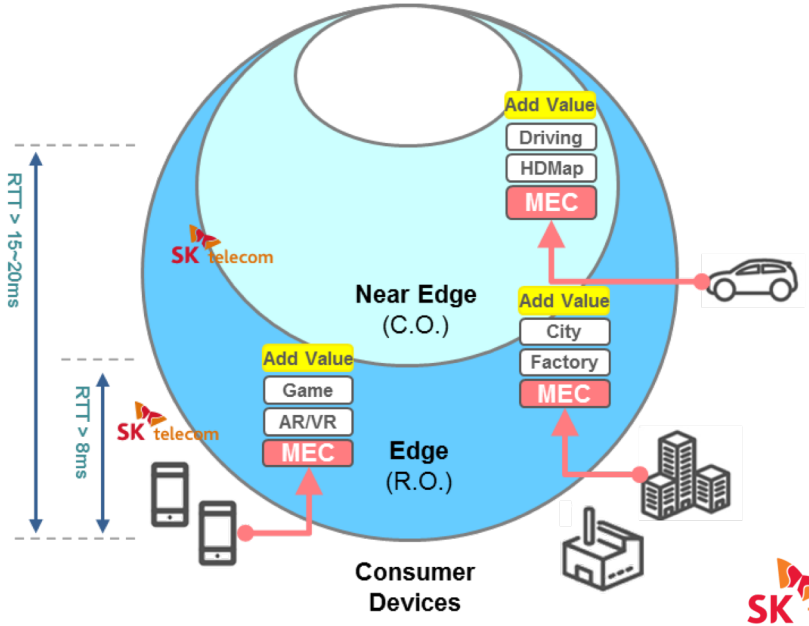
"Most of traffic generated by smartphone and apps are deployed on a public cloud"



5G MEC

Mobile Edge Computing (5G)

"Providing faster and more efficient service is available by operator owned edge infra"



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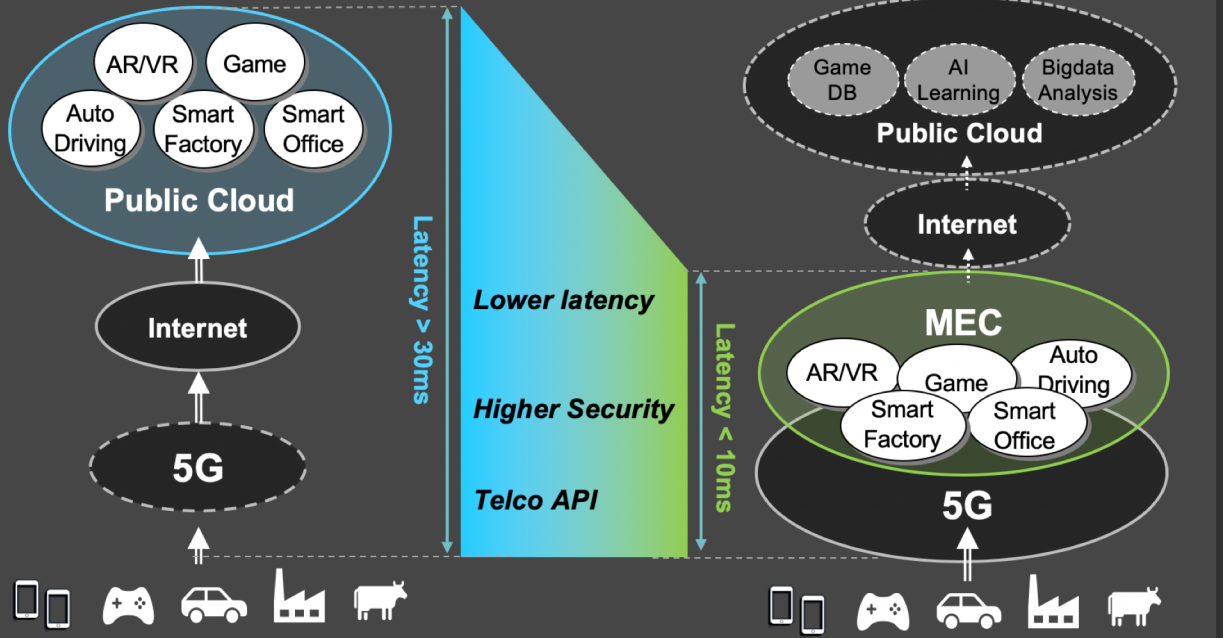
Telco Network Evolution : Hybrid MEC

Provides ultra low latency services in 5G network edge



① **Hyper Edge**
Ultra Low Latency (<10ms)

② **Public Cloud Integration**
Public Cloud Dev Env

③ **Edge Specific Service**
Innovative Telco Service

Public Cloud | **5G MEC** | **SKT MEC**

Telco Needs “Open Collaboration” to Realize its Vision

Open Source Software is “CORE Competency”

Collaboration in Open Source Ecosystem

Making lifecycle manage ment for open infrastruct ure simple, repeatable & resilient

SKT Co-Founded
(TACO Development)

Secure, lightweight CRI compatible virtualized containers

Programmable infrastruct ure for VMs, containers and bare metal

SKT Participated
(TACO Development)

Edge cloud computing Infrastructure for high performance, ultra-low latency applications

CI/CD platform for gating changes across multiple systems/repos

kubernetes

SKT Participated (TACO Development)

Collaboration in Open Source Ecosystem

NBMP & Open Infrastructure

Founding Leader

(SKT & MPEG)

airship

simple, repeatable & resilient lifecycle management for open infrastructure

Co-Founded
(SKT / AT&T)

kata containers

Secure, lightweight CRI compatible virtualized containers

openstack.

Programmable infrastructure for VMs, containers and bare metal

Active

(SKT)

STARLINGX

Edge cloud computing Infrastructure

ZUUL

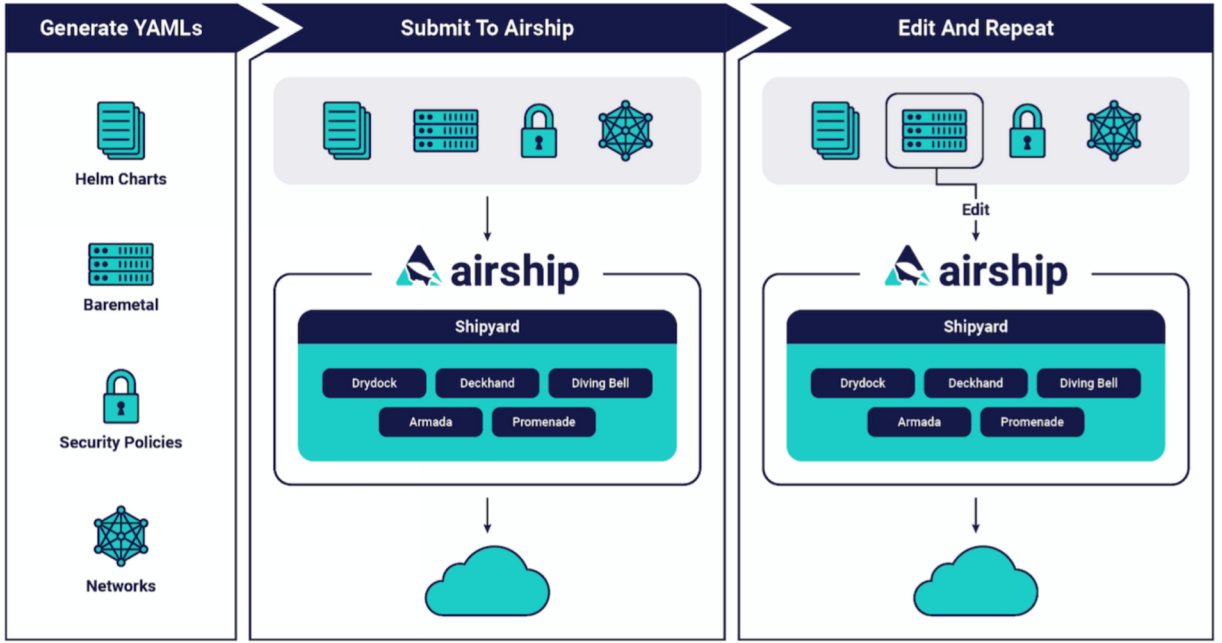
CI/CD platform for gating changes across multiple systems & repos

- NBMP: Network Based Media Processing (MEC for Media)
  Offers Media Processing on Any Cloud Platforms

Cloud Native Meets Open Infrastructure

airship

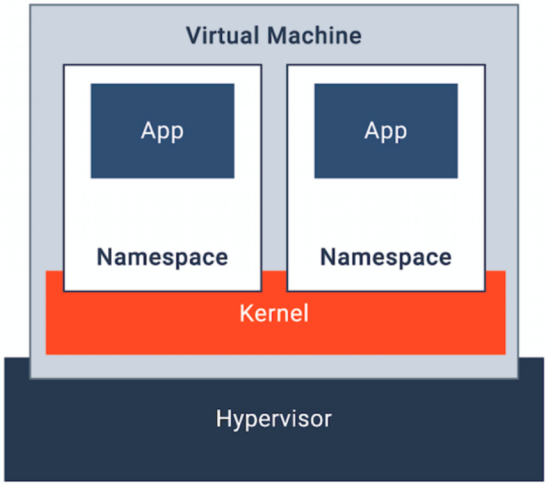
Airship is a collection of loosely coupled but interoperable open source tools that declaratively automate cloud provisioning.



Cloud Native Meets Open Infrastructure

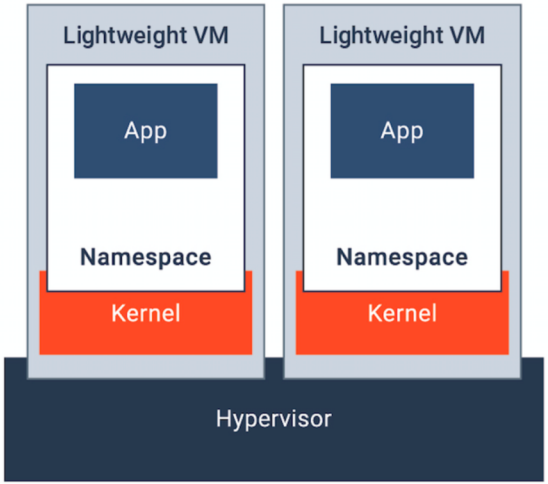
kata containers

OCI compliant, secure container runtime.



Containers in Cloud Today

(Shared kernel, isolation within namespace)

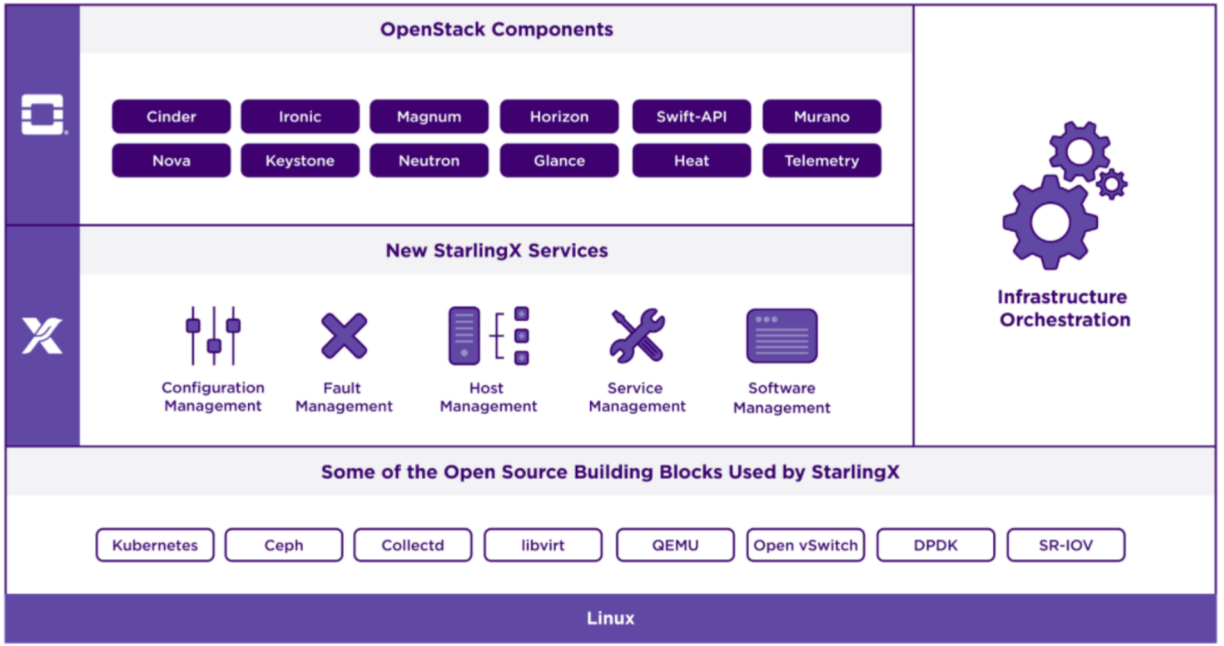


Kata Containers

A lightweight virtual machine isolates each container/pod and provides a separate kernel for each container/pod.

Cloud Native Meets Open Infrastructure

STARLINGX



A fully featured cloud for the distributed edge; specializing in high performance, ultra-low latency applications

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Kubernetes as a Ultimate Infrastructure Delivery Platform

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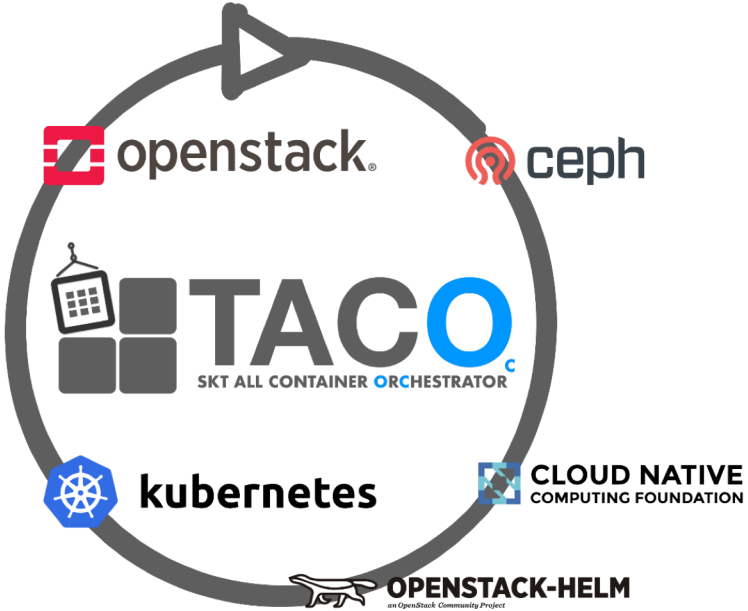
“Declarative” Infrastructure Delivery Technology

TACO Treats Telco Infrastructure like a Cloud Native Application



Open Source SW

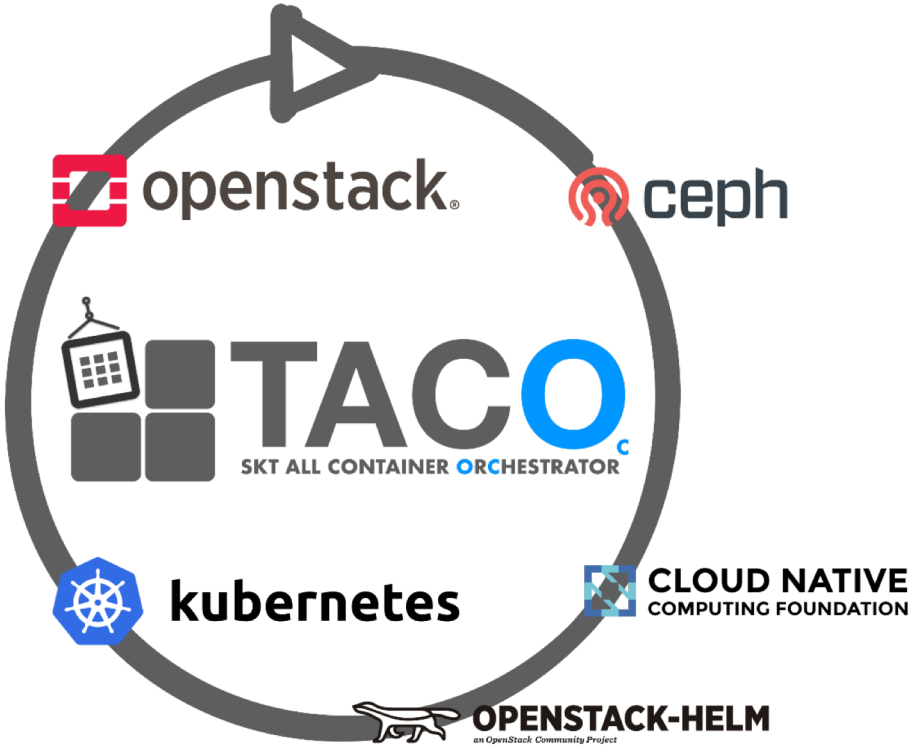
Container-Driven

Predictable

Resilient

Easily Evolvable

Opening Up TACO



July 2019

Open Code and Document

- blog (https://openinfradev.github.io/)
- documentation (https://taco-docs.readthedocs.io/ko/latest/)
- github source repo (https://github.com/openinfradev)

Find collaborators and forming initial ecosystem

Late 2019 ~ Early 2020

Build Community

Evolve to OSF Project (with Airship & NBMP Effort)

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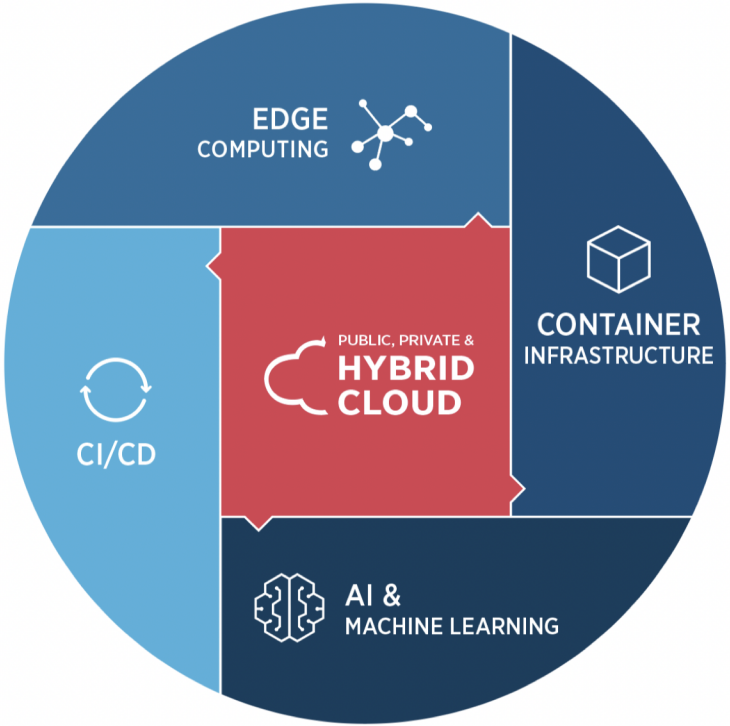
Open Infrastructure Map



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Thank You

/// For Open Collaboration ////////////

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