Open Edge Cloud

Radio Access Networks are changing in 5G

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ETSI 5G RAN architecture
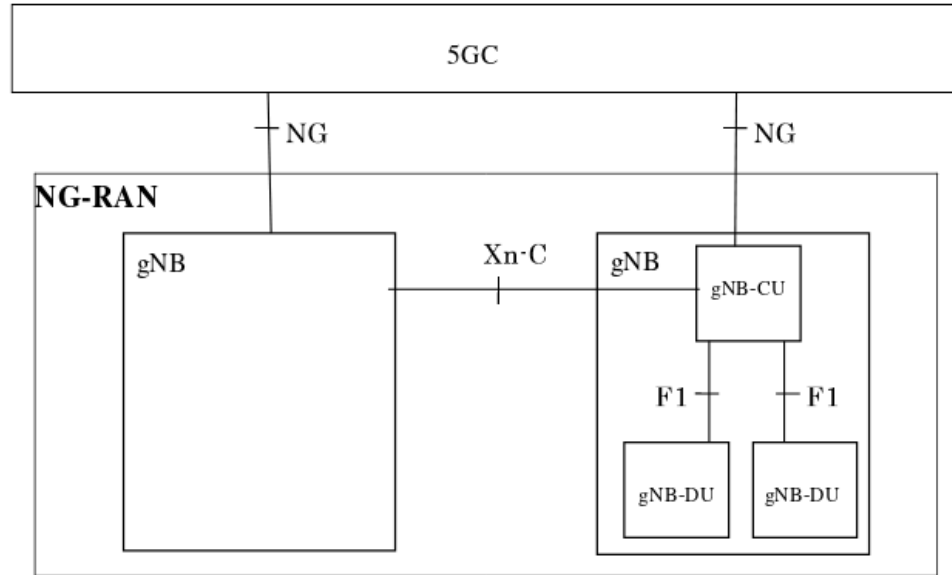
The DU (Distributed Unit) /
CU (Centralized Unit) split enables
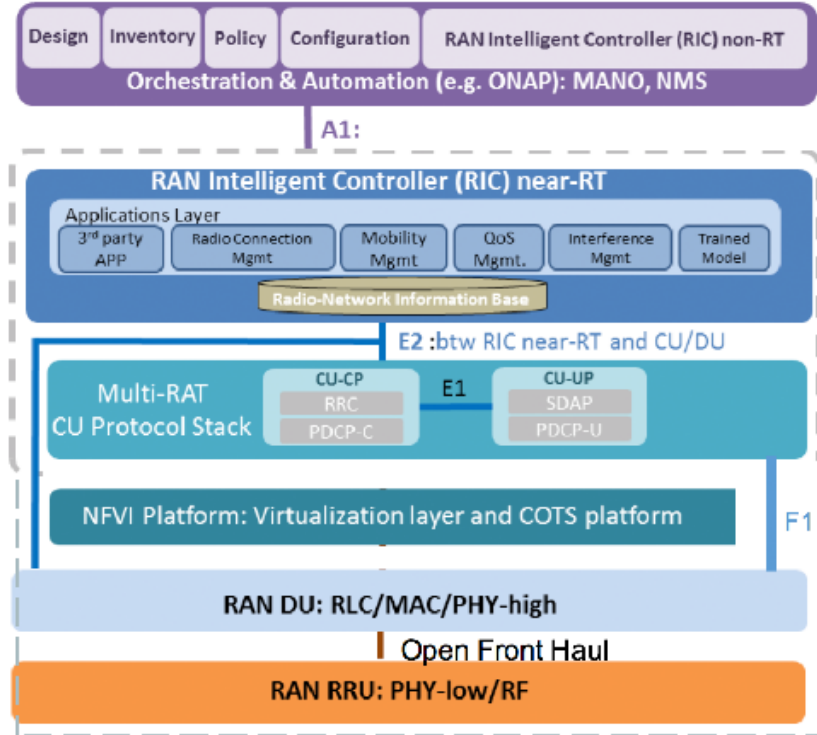running the CU in an edge cloud

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O-RAN RAN architecture

The O-RAN architecture adds new elements
- RAN Intelligent Controller (RIC) near-RT
- RAN Intelligent Controller non-RT

And new interfaces:
- E1 between CU-CP and CU-UP
- E2 between RIC near-RT and CU-CP
- A1 between RIC non-RT and RIC near-RT

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Abstraction infrastructures are changing

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Containers and microservices

Containers make installation, updating and scaling easier

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OpenStack on container infrastructure

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OpenStack-Helm
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Mission
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The goal of OpenStack-Helm is to provide a collection of Helm charts that
simply, resiliently, and flexibly deploy OpenStack and related services
on Kubernetes.
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Use cases

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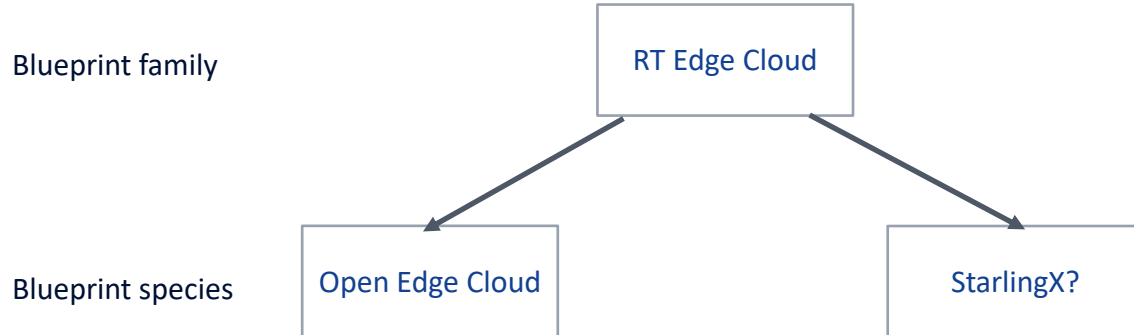**NOKIA**

As an operator, I want to

- **Deploy** an LTE/5G **network** as the components RRH, DU, CU, and RIC to leverage the benefits of standard hardware and software infrastructures at the edge of the network

- **Promote an ecosystem** of interchangeable components in the RAN

- Enable new **machine-learning based algorithms** for optimizing radio access

- Sample Channel Quality Indicators to get a better understanding of the **radio network quality** in different locations

- Collect and analyze detailed **event logs** for troubleshooting and performance optimization

- Fast-speed **beamforming** to use intelligent algorithms to guide beamforming with different parameters

- Optimize radio network **capacity allocation** and **power saving**

All of these allow for more optimal resource allocation which will benefit the end users with **better quality of service**.

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Real-Time cloud for the New Radio

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Hierarchy of RT Clouds

Blueprint family

RT Edge Cloud

Blueprint species

Open Edge Cloud

StarlingX?

Common:
- Use cases: vRAN, RIC
- Far edge deployment
- Real-time test cases
- Stress testing
- OpenComputePlatform hardware
- System management APIs?

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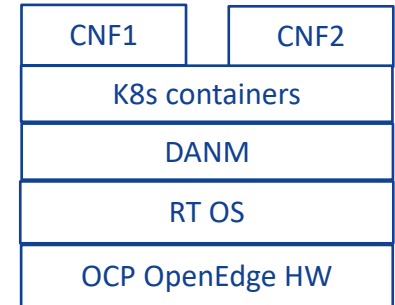# Reference architectures for release 1 and release 2

Upstream features in Akraino Rel1
- CPU management
- NUMA management
- Network management (DANM)
- Low-latency kernel options
- CentOS and Ironic

Release 1

VNF1	VNF2
OpenStack	
K8s containers	
Ovs-dpdk	
RT OS	
OCP OpenEdge HW	

Kubernetes

Airship

Release 2

CNF1	CNF2
K8s containers	
DANM	
RT OS	
OCP OpenEdge HW	

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