Blueprint: The AI Edge

Baidu

THE LINUX FOUNDATION

LF EDGE

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General Blueprint Introduction

- The AI Edge Blueprint focuses on establishing an open source MEC platform combined with AI capacities at the Edge, which could be used for safety, security, and surveillance.
- The first release of the AI Edge Blueprint is targeted at Q4, 2019.
- The AI Edge Blueprint is sponsored by Baidu, Arm, and Intel.
- Contact: Hechun Zhang (zhanghechun@baidu.com)
- Refer to: https://wiki.akraino.org/display/AK/The+AI+Edge+Blueprint+Family

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Blueprint Use cases

Security Monitoring	Conduct smoke detection on densely populated places such as industrial parks and community properties to quickly detect whether there is a fire, reduce the damage caused by fire, and improve the safety of the park.
Classroom concentration analysis	Conduct a full evaluation of the overall class and the concentration of individual students, help teachers and school authorities to fully understand the teaching situation, according to the concentration data of each course, conduct targeted class knowledge test and strengthen.
Factory safety production	By identifying whether employees wear helmets, safety gloves, etc., monitor and evaluate the work of workers in the workshop to help companies monitor the safety production status in a comprehensive and timely manner. Statistical results and analytical data can be used as a reference for strengthening the level of safety production management.
Kitchen hygiene monitoring	Monitor staff's smoking and cell phone behavior in the kitchen of the catering industry, ensuring the safety and hygiene of the food production process.

Concentration Analysis

Helmet Detection

Call Detection

Smoking Detection

Hair Detection

Fire Detection

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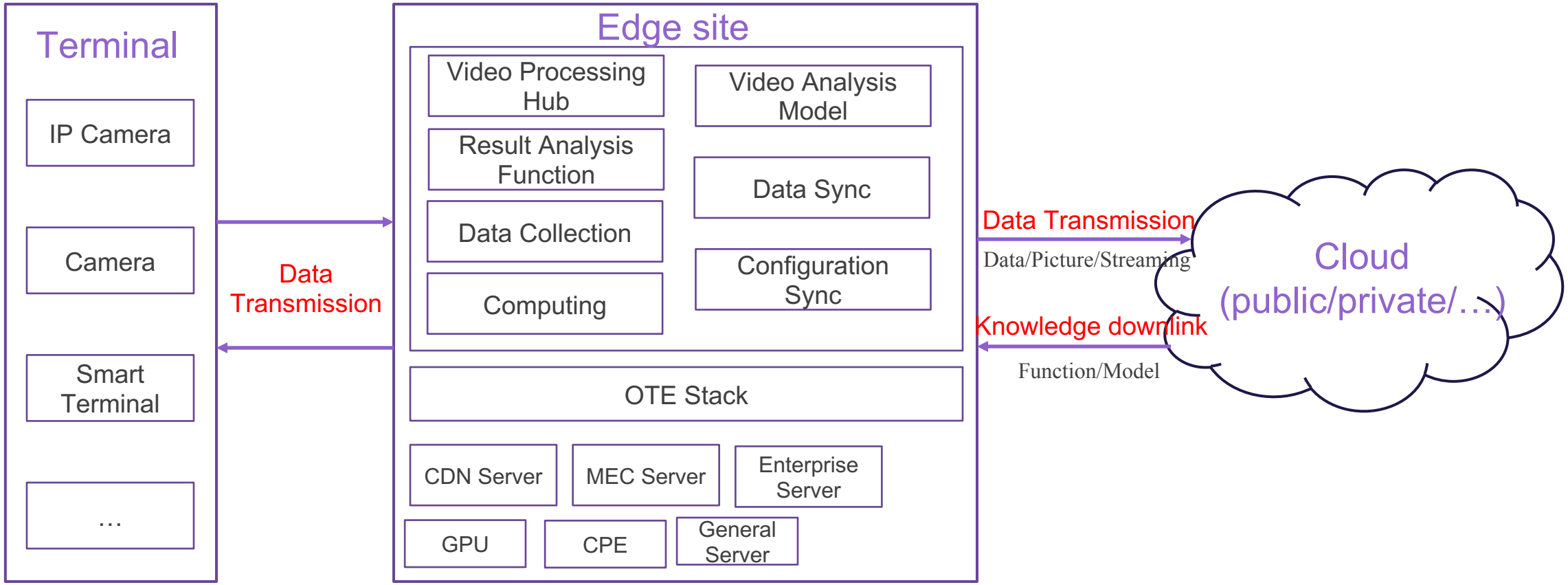
Network Architecture



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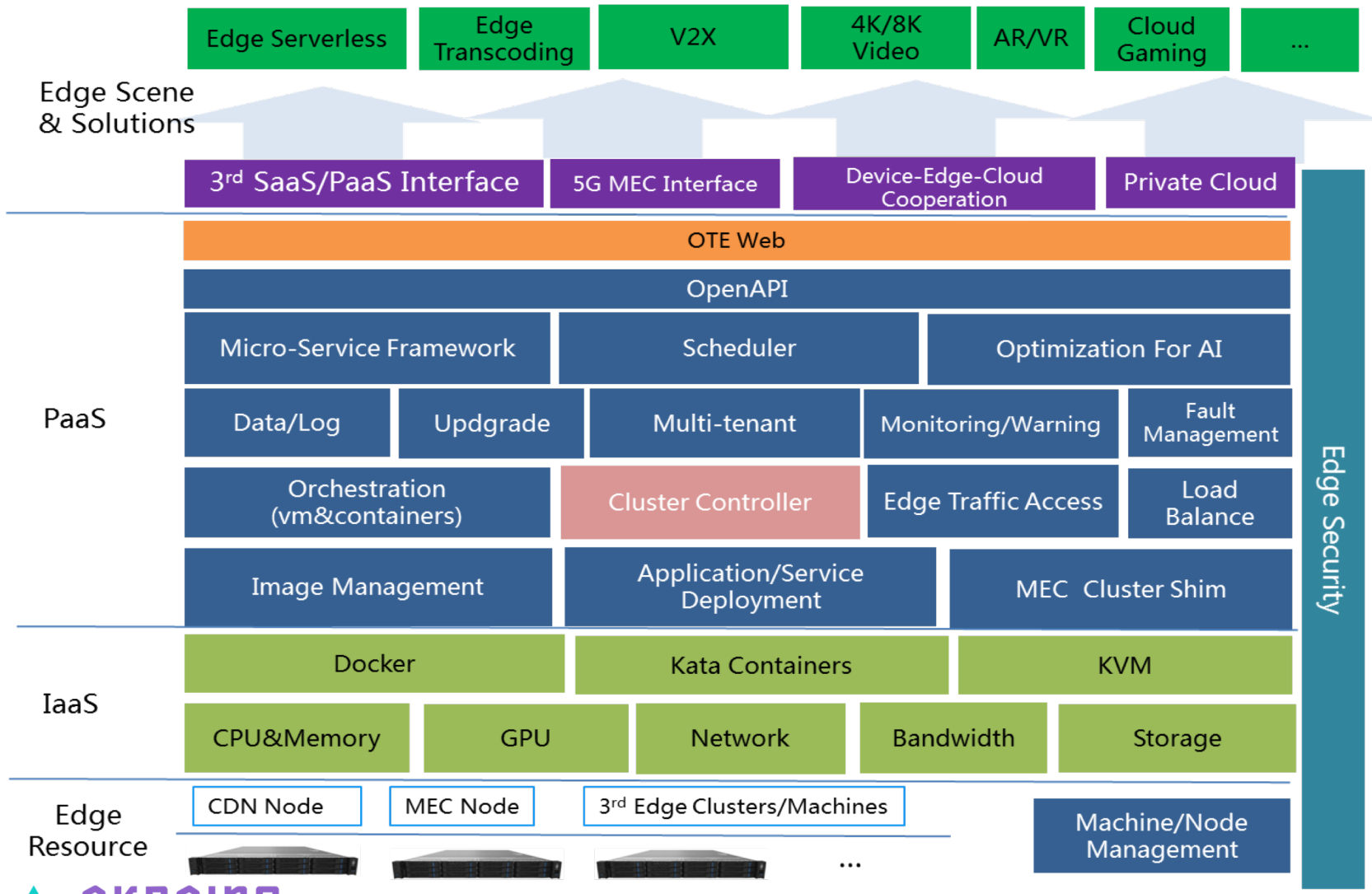
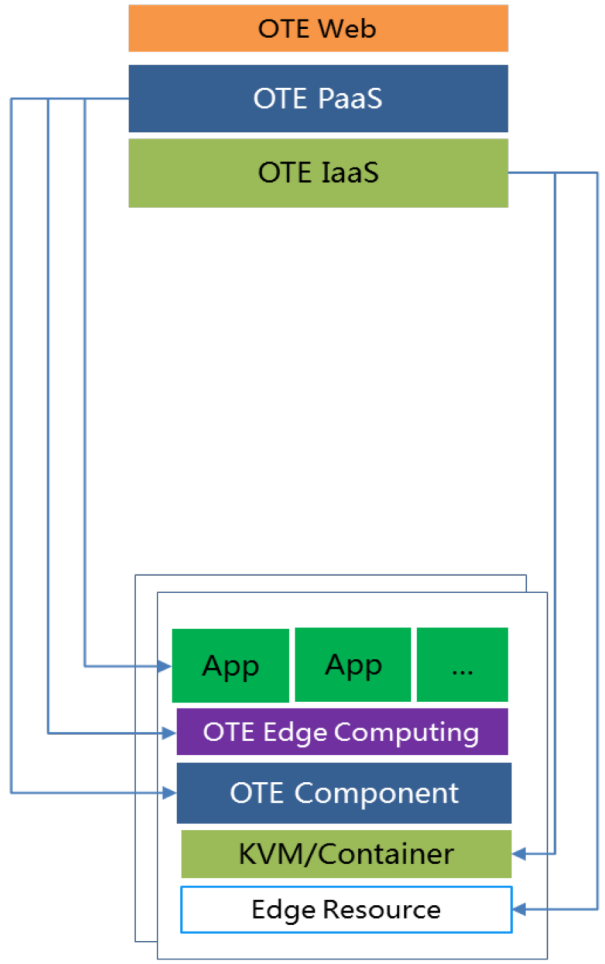
MEC Software Architecture





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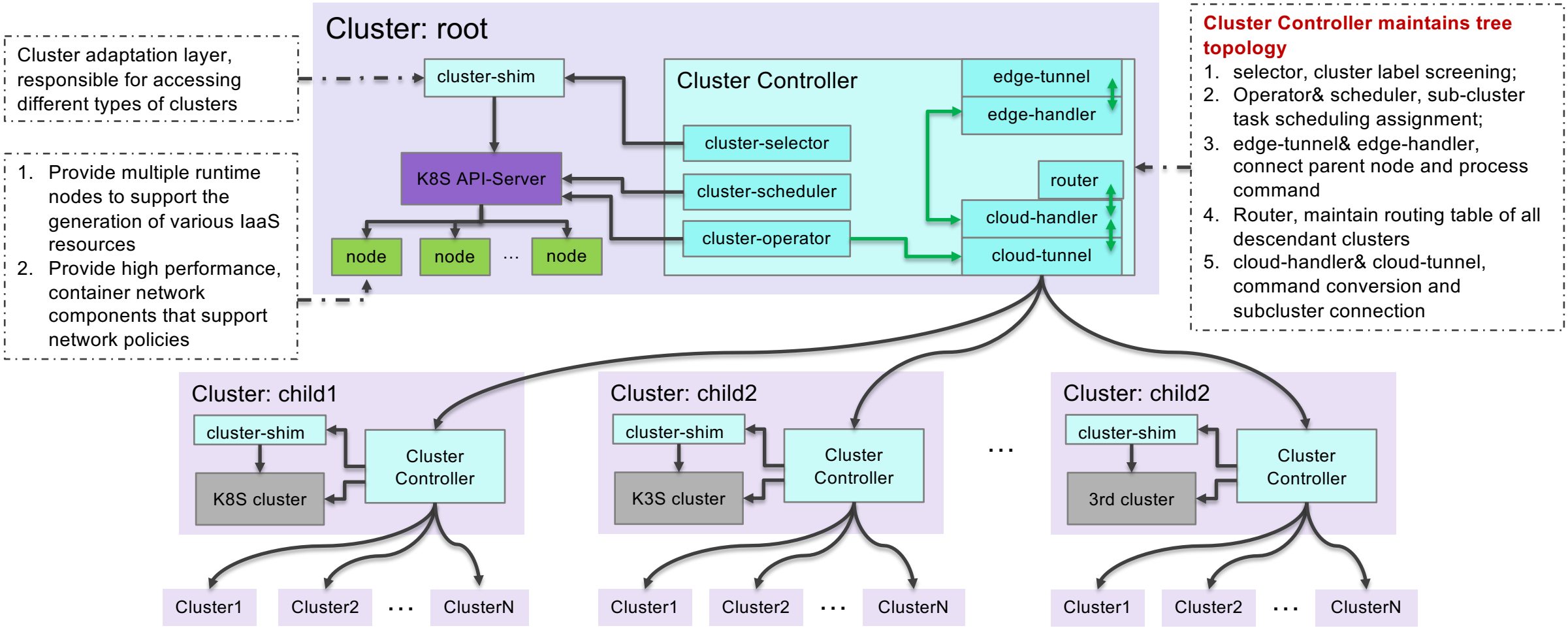
Physical Topology



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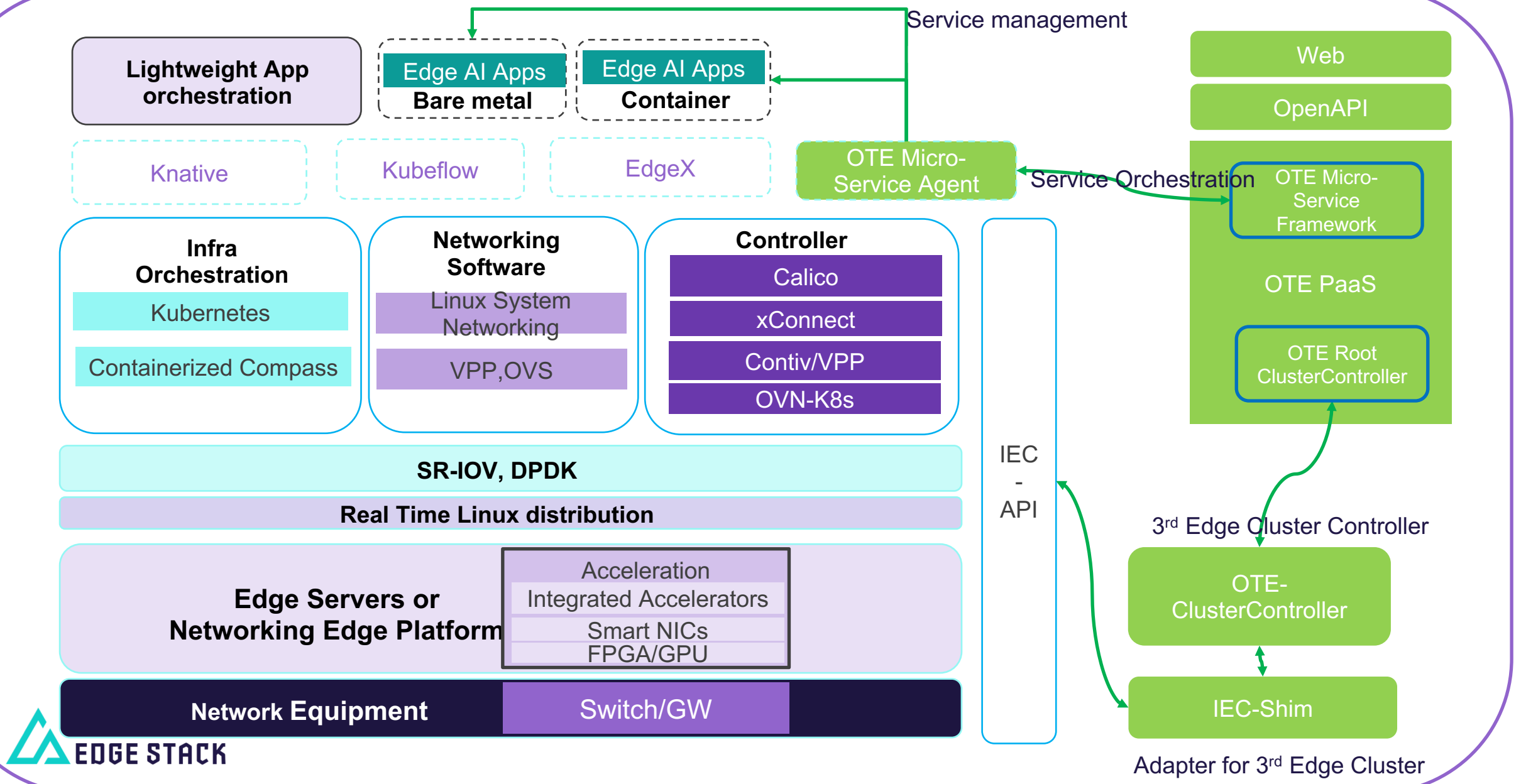
The AI Edge use IEC as Edge Infrastructure



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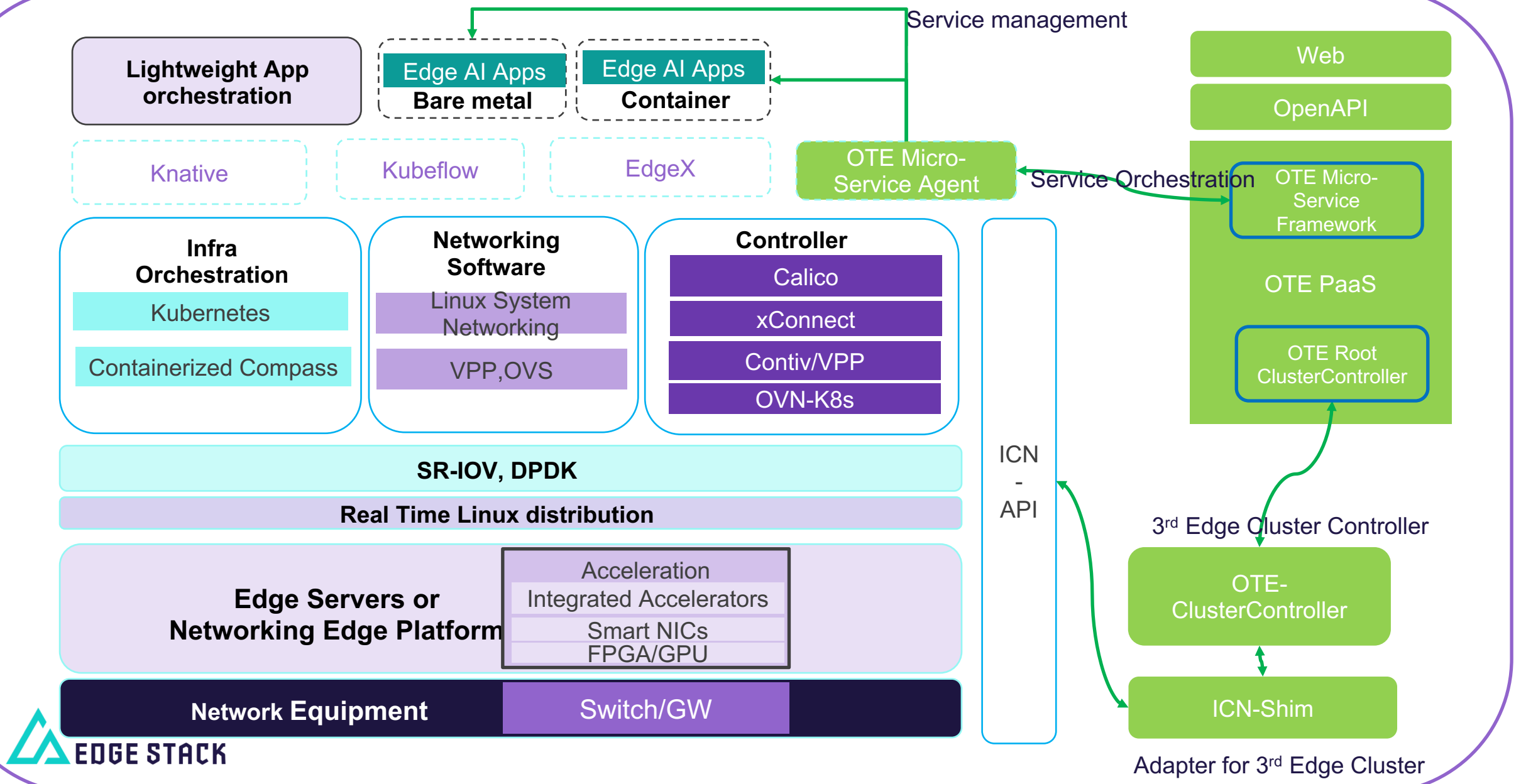
The AI Edge use ICN as Edge Infrastructure



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Future Plan

- The first demo of the AI Edge Blueprint is targeted at Oct 31st, 2019.
- The first Akraino version will be released in Q4, 2019.

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The AI Edge Blueprint Criteria

Case Attributes	Description	Informational
Type	The AI Edge	
Blueprint Family - Proposed Name	New	
Use Case	Safety, Security, and Surveillance	
Blueprint proposed Name	The AI Edge	
Initial POD Cost (capex)	Leverage Unicycle POD - less than $150k	
Scale & Type	Up to 4 servers, x86/ARM server or deep edge class With nVIDIA Tesla P4/T4 GPUs	
Applications	1. Small scale IoT data aggregation and machine learning platform 2. Small scale deep learning models training for video data 3. Model training for Acumos Apps	
Power Restrictions	Less than 10Kw	
Infrastructure orchestration	Docker 1.13.1 or above K8s 1.12.5 or above- Container Orchestration OS – CentOS 7.0 or above	
PaaS	OTE Stack	
SDN	Calico container networking, or OVS-DPDK	
Workload Type	Containers	
Additional Details	Acumos and EdgeX interfaces will be connected in this case	

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