

# Blueprint: AI on the Edge

Baidu

 THE **LINUX** FOUNDATION

 **LF** EDGE

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# General Blueprint Introduction

- ❑ AI on the 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 AI on the Edge Blueprint is targeted at Q4, 2019.
- ❑ AI on the Edge Blueprint is sponsored by Baidu, Arm, and Intel.
- ❑ Contact: Hechun Zhang (zhanghechun@baidu.com)
- ❑ Refer to:

<https://wiki.akraino.org/display/AK/IEC+Type+5%3A+AI+on+the+edge+for+Integrated+Edge+Cloud+%28IEC%29+Blueprint+Family>



# 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

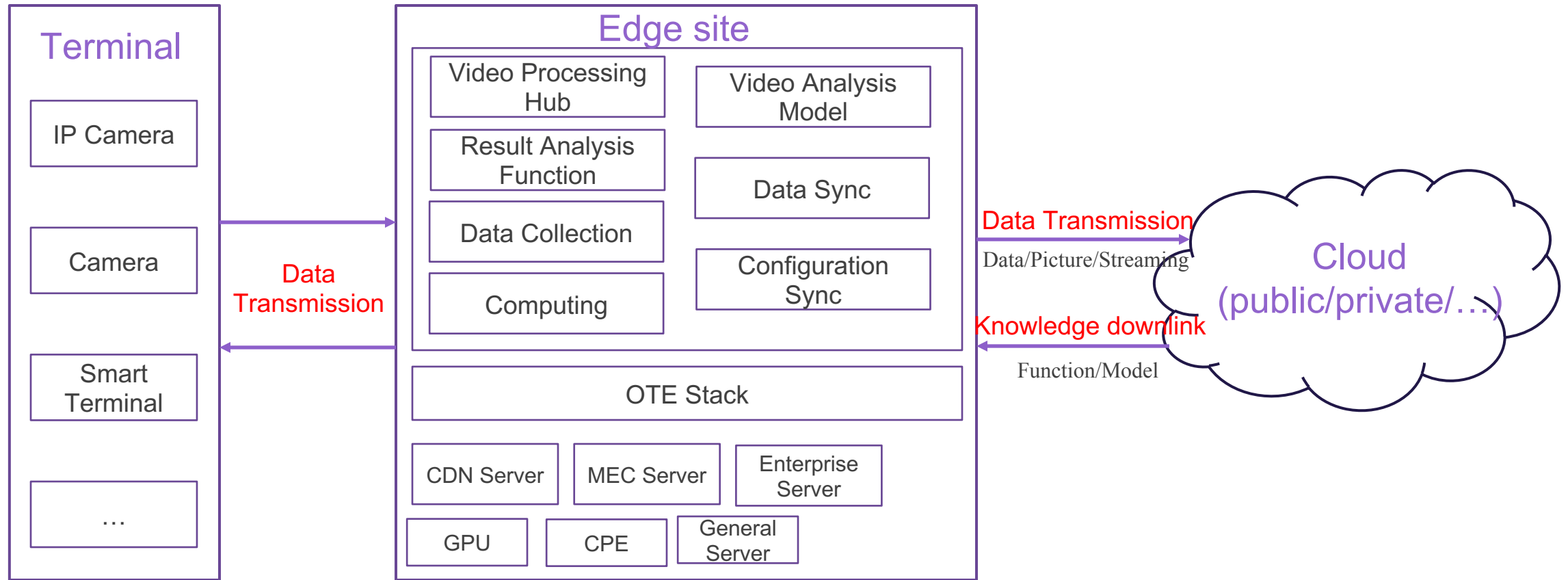


Fire Detection

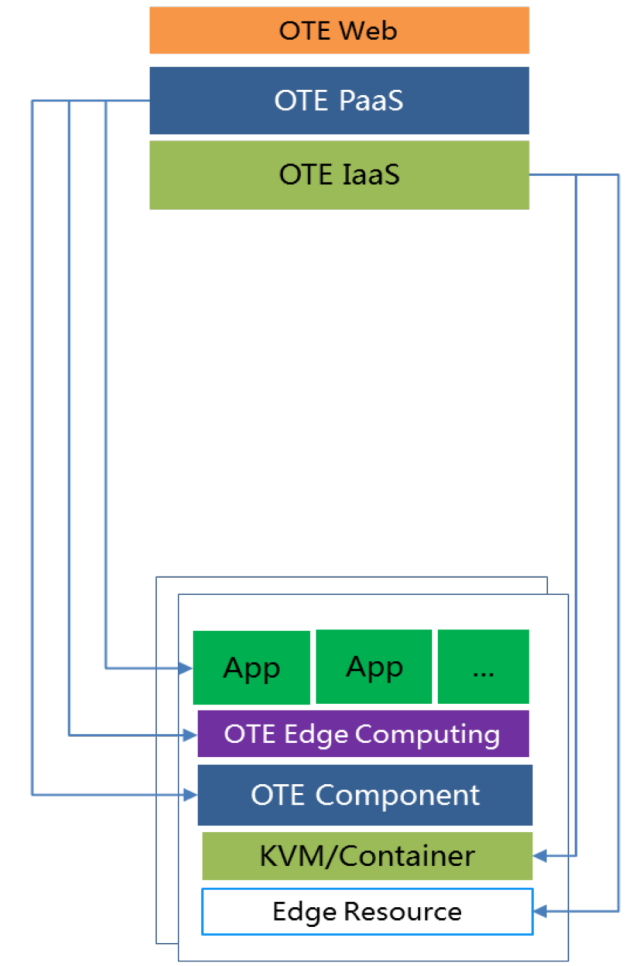
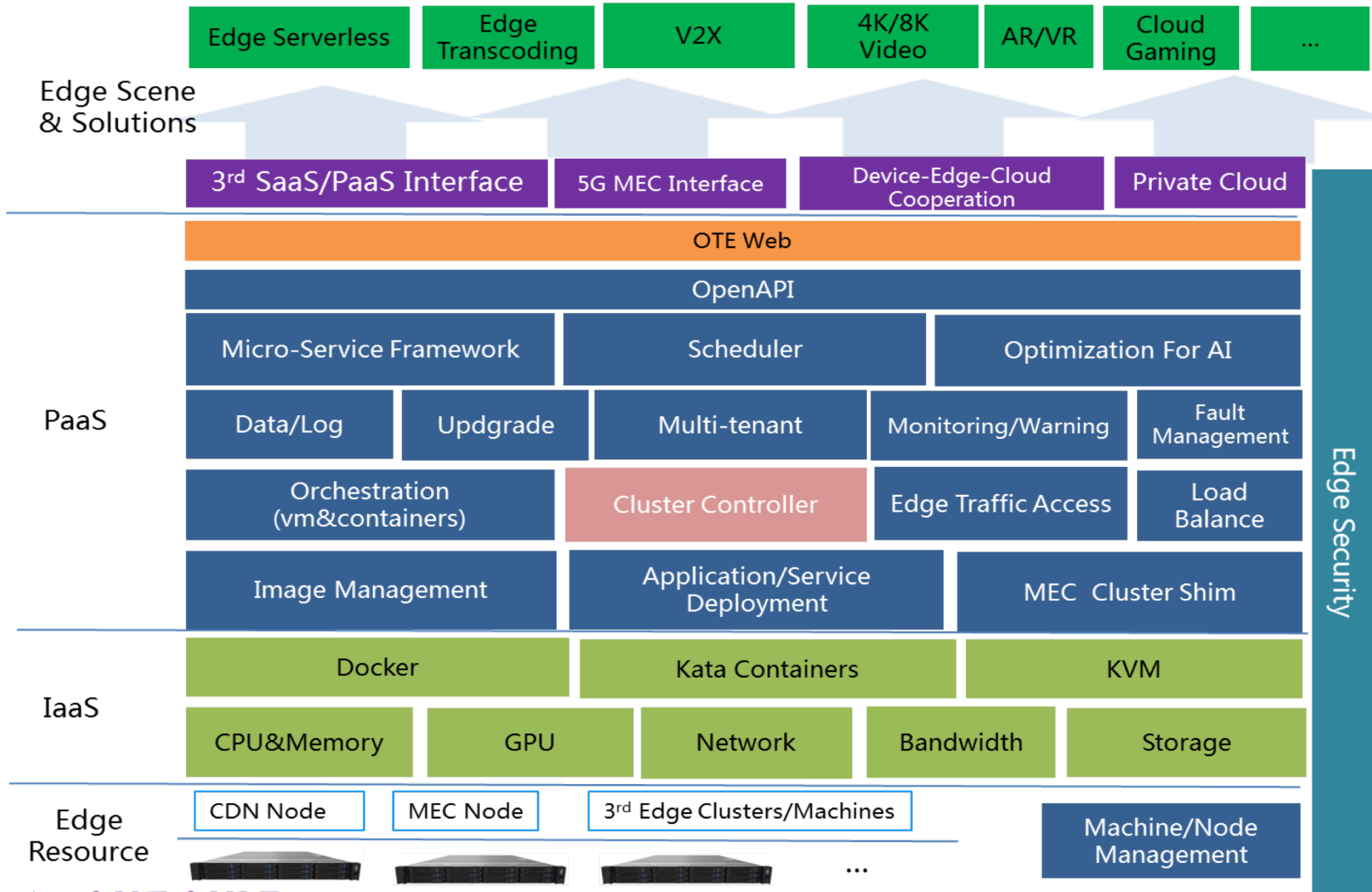




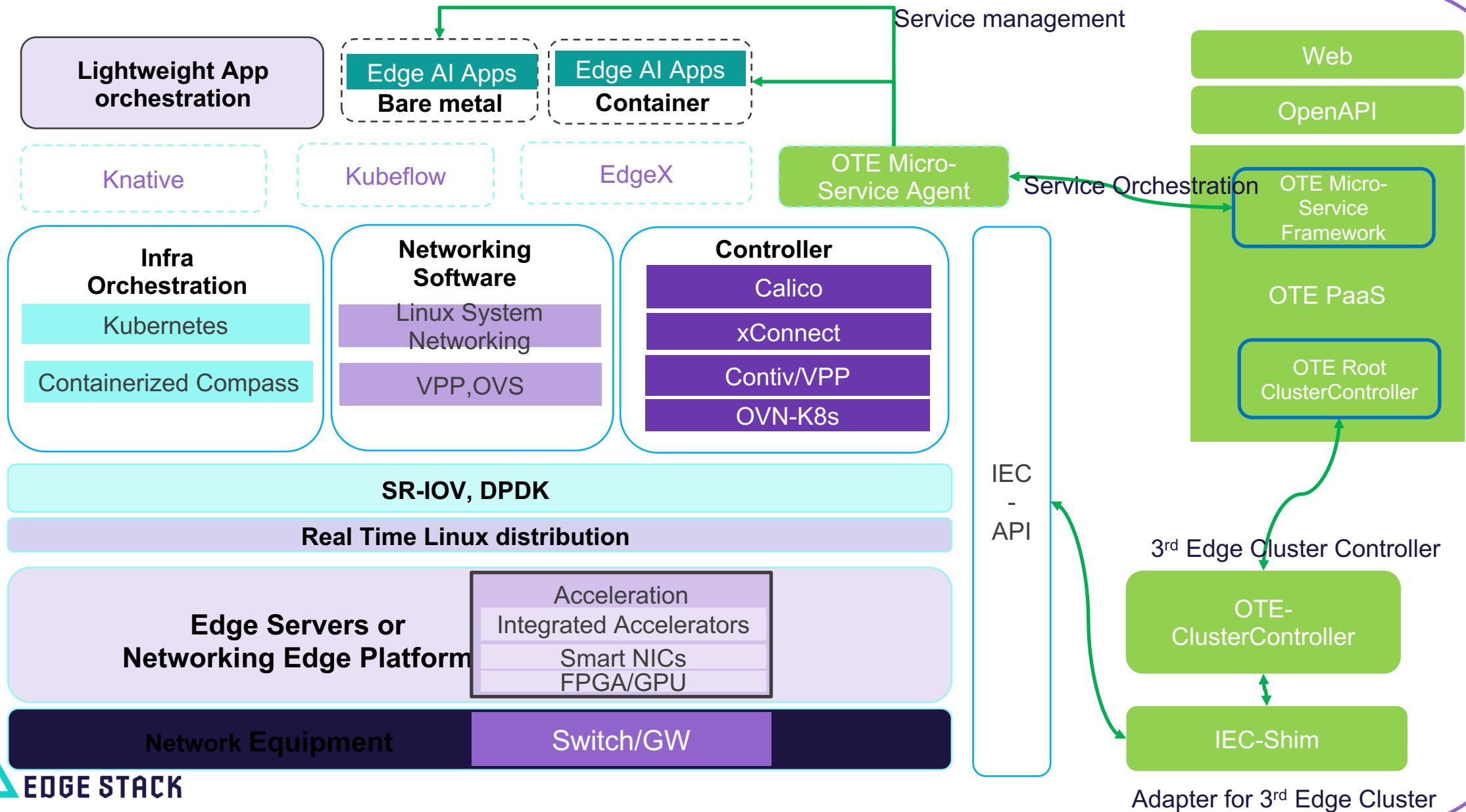
# Network Architecture



# MEC Software Architecture



# OTE Use IEC as Edge Infrastructure





# Future Plan

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

# AI on the Edge Blueprint Criteria

Case Attributes	Description	Informational
Type	New Blueprint for AI on the Edge	
Blueprint Family - Proposed Name	Integrated Edge Cloud (IEC)	
Use Case	Safety, Security, and Surveillance	
Blueprint proposed Name	AI on the 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	<ol style="list-style-type: none"> <li>1. Small scale IoT data aggregation and machine learning platform</li> <li>2. Small scale deep learning models training for video data</li> <li>3. Model training for Acumos Apps</li> </ol>	
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	<u>Acumos</u> and EdgeX interfaces will be connected in this case	

## Contact Us

# The Linux Foundation

1 Letterman Drive

Building D, Suite D4700

San Francisco CA 94129

Phone/Fax: +1 415 7239709

[www.linuxfoundation.org](http://www.linuxfoundation.org)



## General Inquiries

[info@linuxfoundation.org](mailto:info@linuxfoundation.org)

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[membership@linuxfoundation.org](mailto:membership@linuxfoundation.org)

## Corporate Training

[training@linuxfoundation.org](mailto:training@linuxfoundation.org)

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[sponsorships@linuxfoundation.org](mailto:sponsorships@linuxfoundation.org)



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