

Blueprint: Robotaxi

Baidu

 THE **LINUX** FOUNDATION

 **LF** EDGE

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General Blueprint Introduction

- ❑ The Robotaxi Blueprint focuses on establishing an open source MEC platform combined with AI capabilities at the autonomous driving scenario.
- ❑ The first release of the Robotaxi Blueprint is targeted at Q2, 2020.
- ❑ The Robotaxi Blueprint is sponsored by Baidu, Intel, Arm, and Vmware.
- ❑ Contact: Hechun Zhang (zhanghechun@baidu.com)
- ❑ Refer to: <https://wiki.akraino.org/display/AK/The+AI+Edge%3A+RoboTaxi>

Blueprint Use cases

■ Urban Scenarios with autonomous driving vehicles

Avoiding blind spots or safer autonomous driving and accelerating efforts in implementing driving fleet solutions.

- Autonomous drive sharing: reducing the cost-per-kilometer by 50% compared to current private car and taxi costs
- Low-speed unmanned logistics vehicles
- Unmanned minibuses in closed parks
- Unmanned buses on city roads



autonomous ride sharing



low-speed unmanned
logistics vehicles



unmanned minibuses



unmanned buses

Blueprint Use cases

■ Use cases for Valet Parking

- Deploy sensors on vehicles and parking lots, combined with high-precision positioning, allowing vehicles to engage in fully autonomous parking.

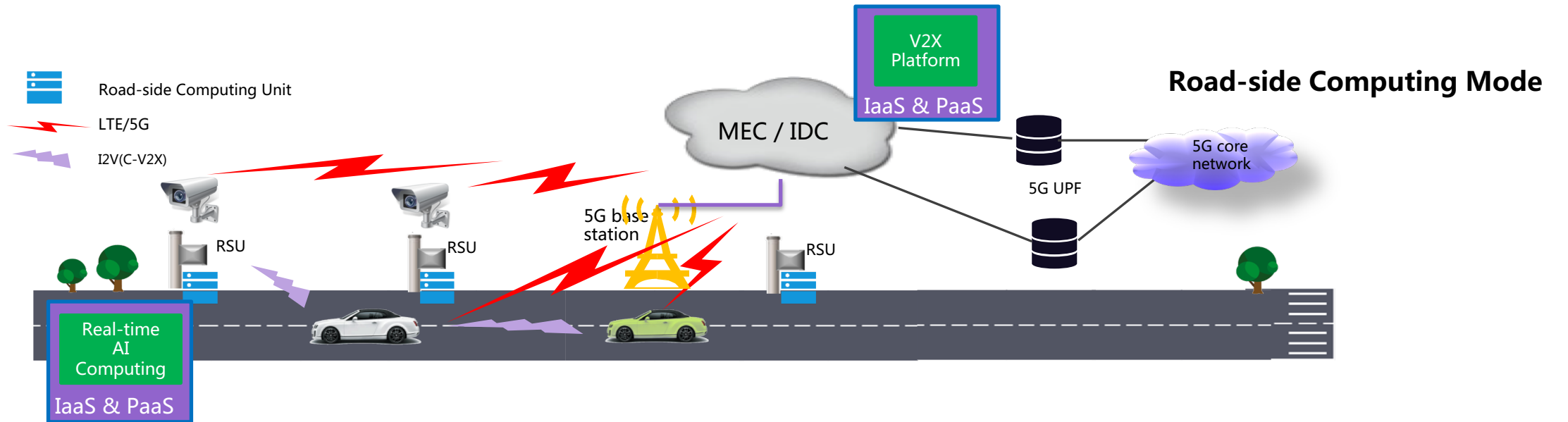


■ Regional upgrade for autonomous driving vehicles

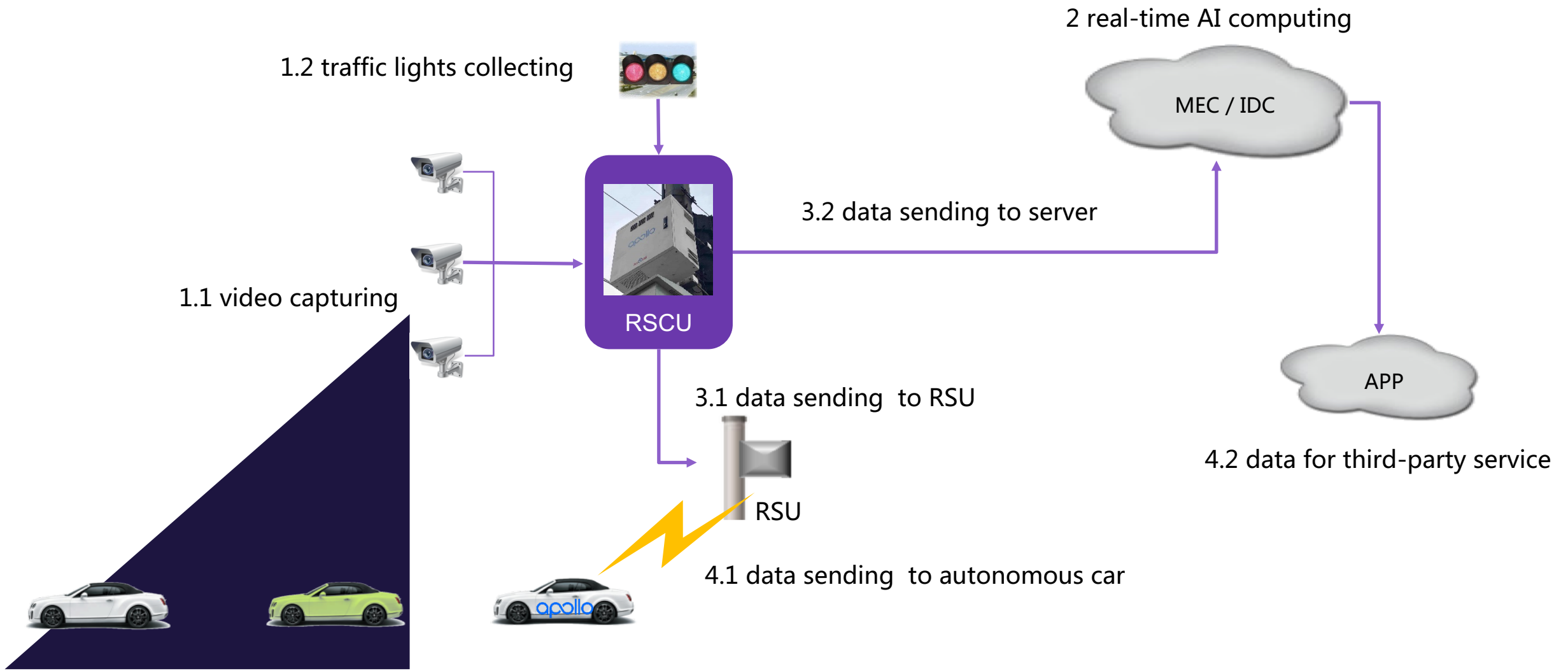
- With roadside sensing equipment, the vehicles can get more road condition information and make the driving mode more intelligent.



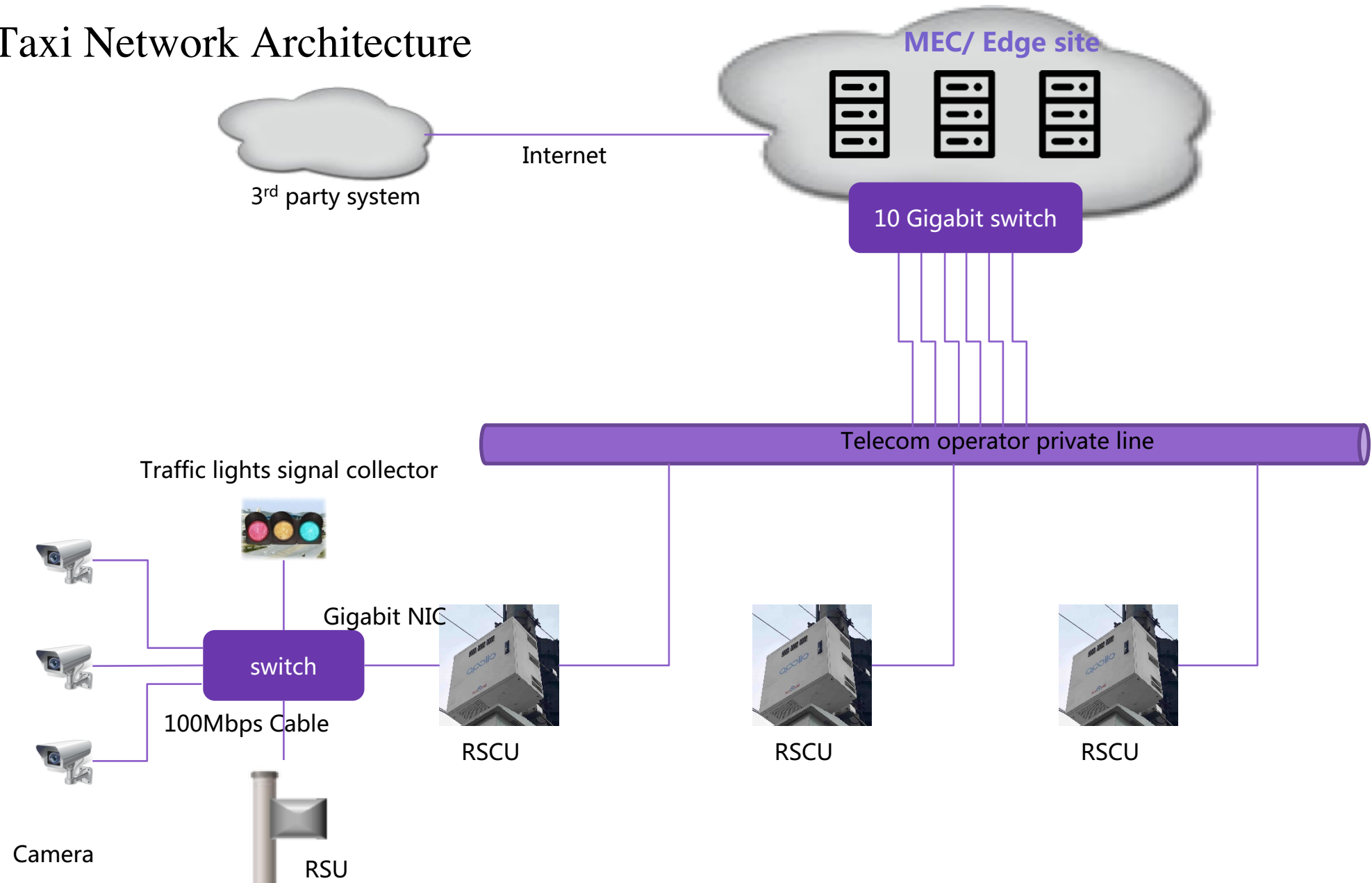
RoboTaxi Network Components



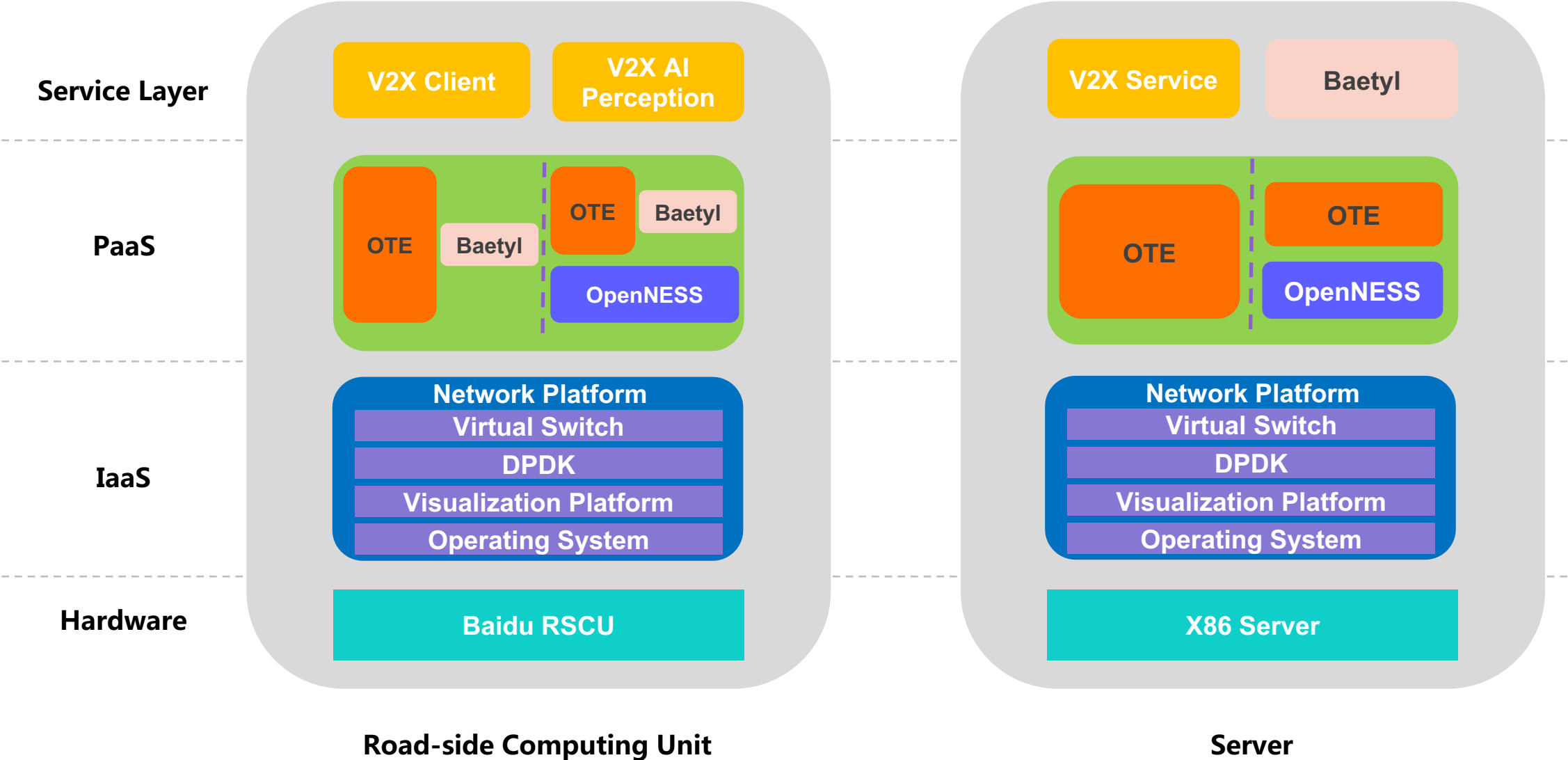
RoboTaxi Network Architecture



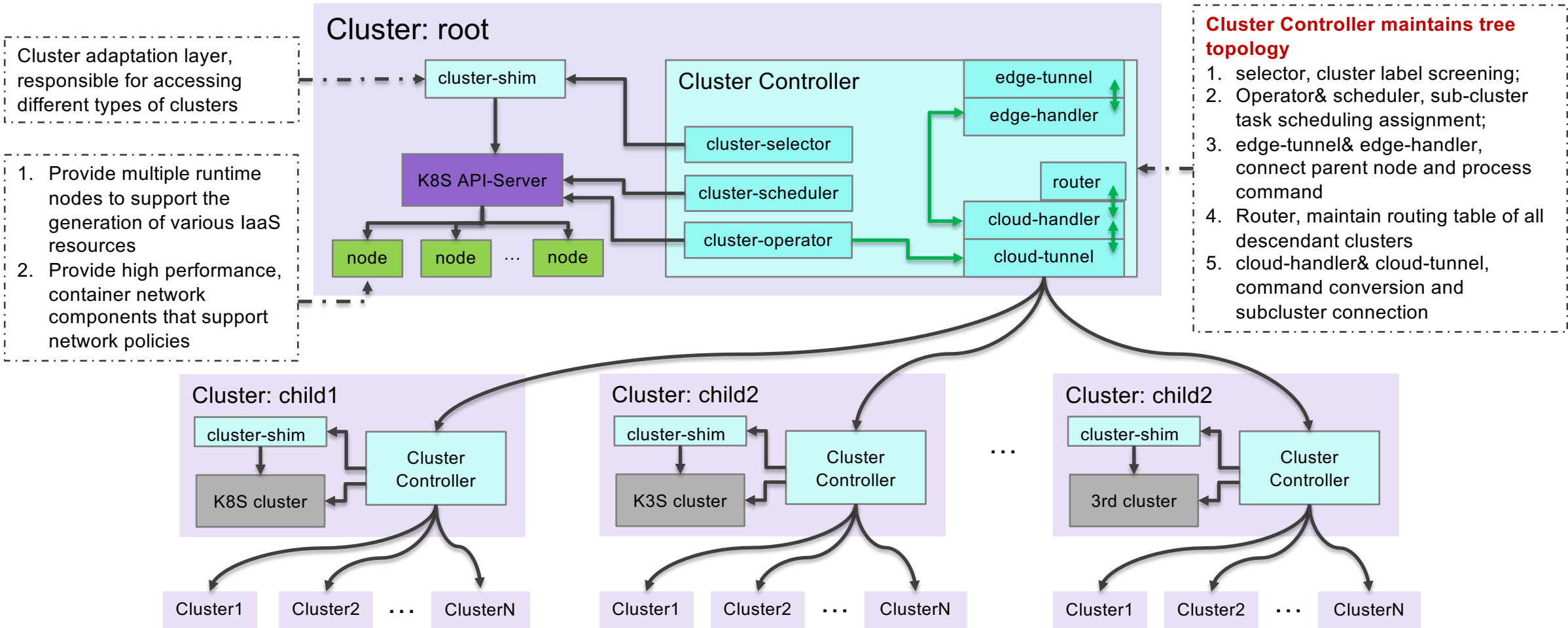
RoboTaxi Network Architecture



RoboTaxi MEC platform software architecture



Physical Topology of OTE Stack MEC Platform



Future Plan

- ❑ The first demo of the RoboTaxi Blueprint is targeted at Q1, 2020.
- ❑ The first Akraino version will be released in Q2, 2020.

The Robotaxi Blueprint Criteria

Case Attributes	Description	Informational
Type	New	
Blueprint Family - Proposed Name	The AI Edge	
Use Case	Autonomous driving taxi	
Blueprint proposed Name	Robotaxi	
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	Autonomous driving taxi	
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 + Baetyl + OpenNESS	
SDN	Calico container networking, or OVS-DPDK	
Workload Type	Containers	
Additional Details	N/A	

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