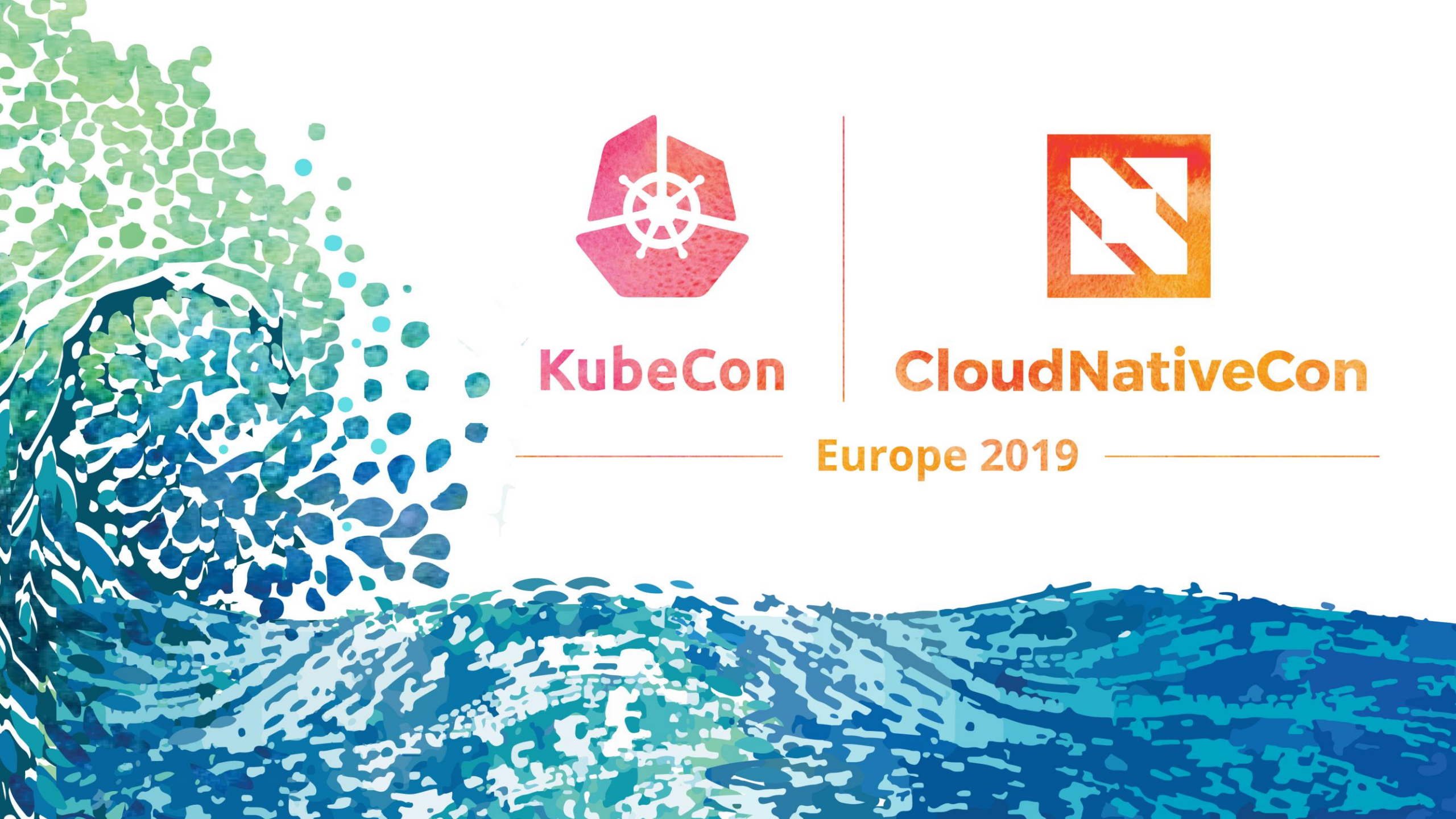
KubeCon
CloudNativeCon
Europe 2019

KubeEdge

Introduction

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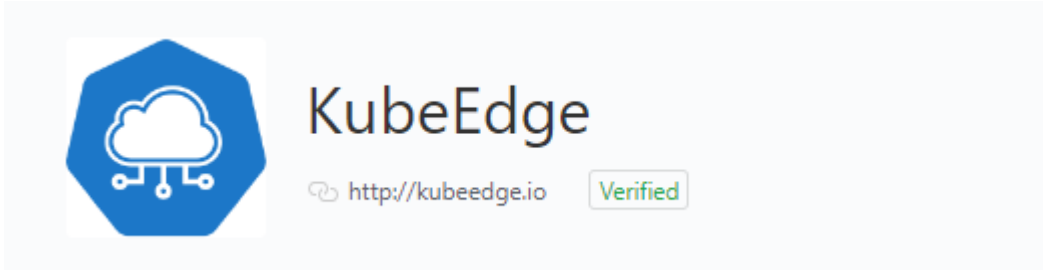
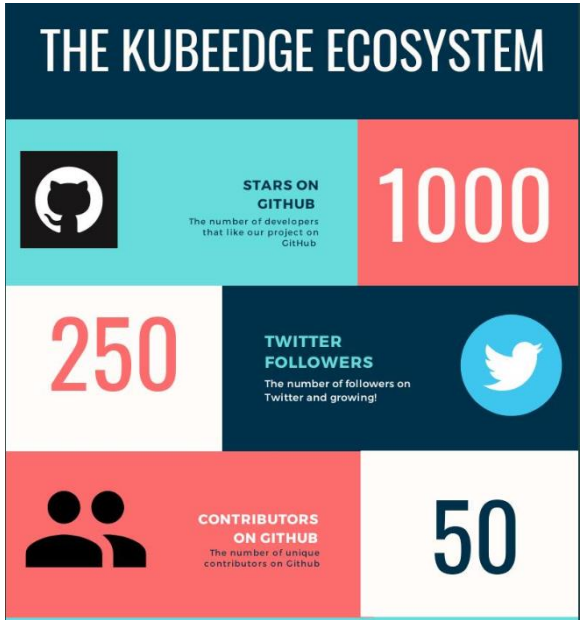
Background

- KubeEdge targets to edge computing
  - CNCF Sandbox project
  - Open-sourced both cloud and edge code
  - Release 0.1, 0.2 and 0.3
  - Reference architecture by K8s IOT/Edge WG
- K8S IOT/Edge WG



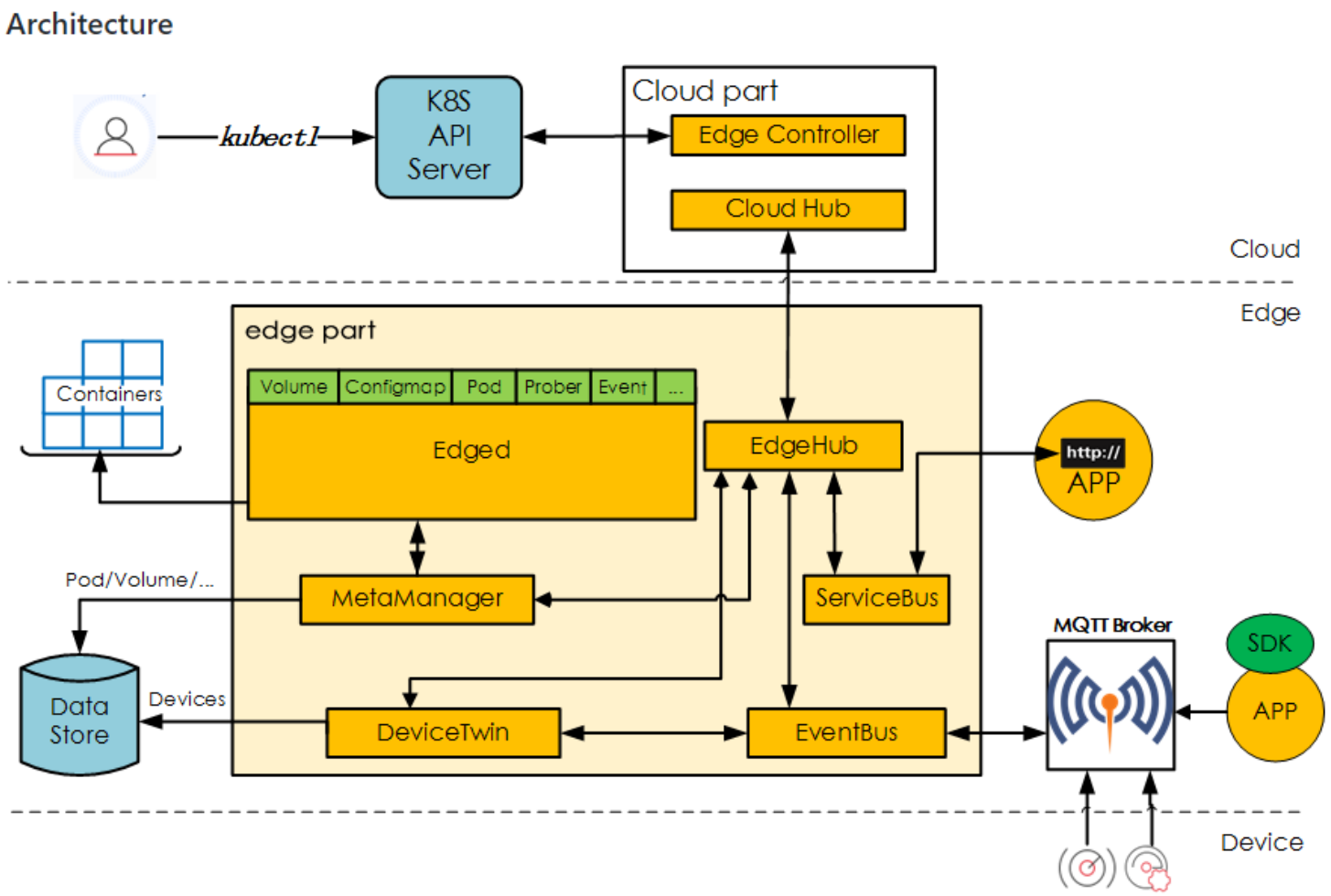


Our vision and mission

Enable customers to run applications natively at cloud and edge

- Build a K8s based infrastructure for IOT/Edge computing.
- Manage K8s resources and orchestrate applications/services without knowing the location: cloud or edge
- No change of existing K8s APIs and primitive types
- From cloud, users can register/manage worker nodes; deploy/orchestrate applications
- In a cluster, the worker node can be at cloud or edge
- Special edge network topology, scalability, performance and security requirements and challenges can be met

What's New

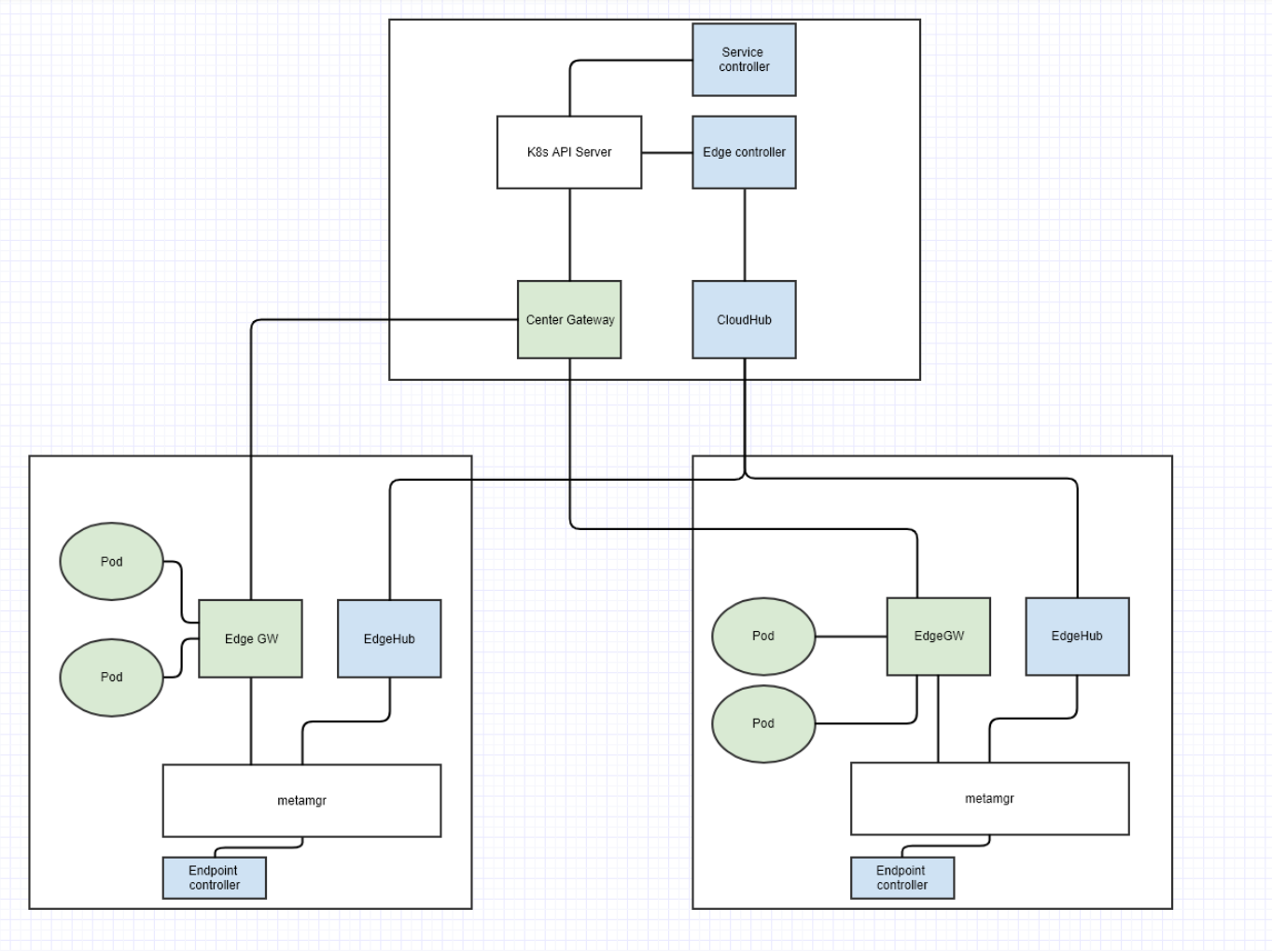


- Both cloud and edge code are open-sourced
- Fundamental infrastructure support
- Device management and messaging
- MQTT, Zigbee, Bluetooth, etc device protocol wrapping support
- Edge side autonomy covering network disconnect/reconnect scenario

What's Next --- Service & Mesh

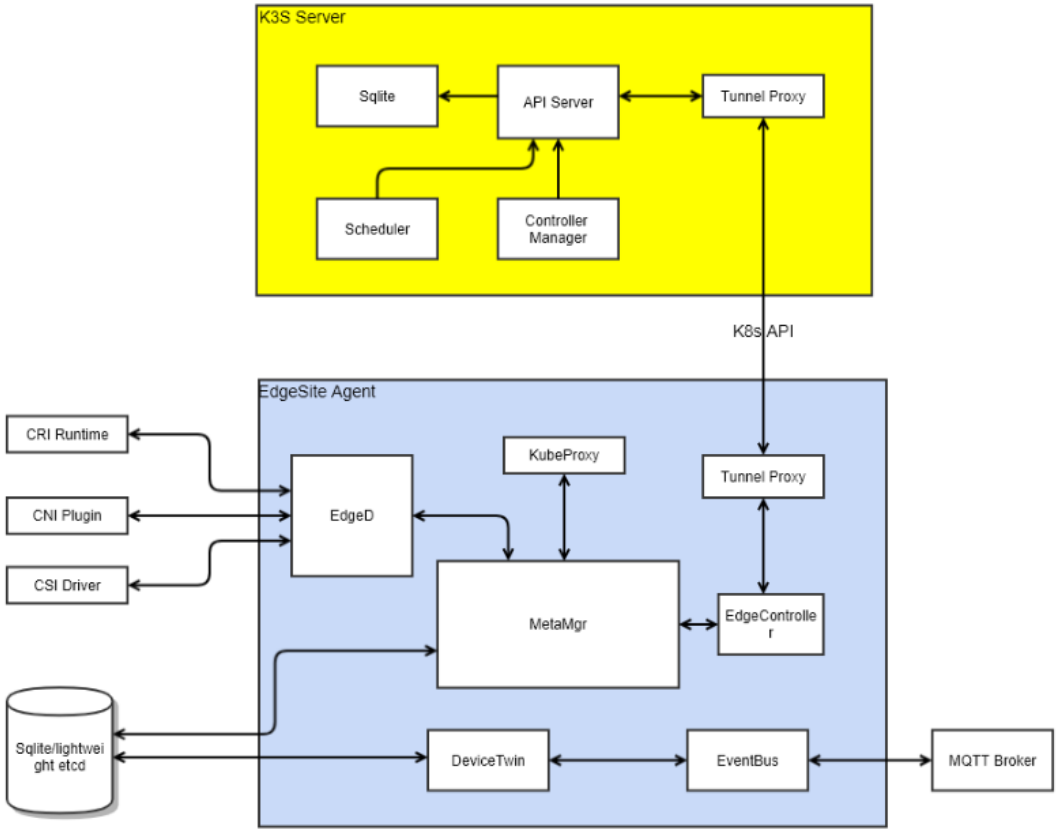
K8s service discovery, routing and lifetime management

- Support service and endpoint
- Service discovery
- Support north-south and east-west network routing



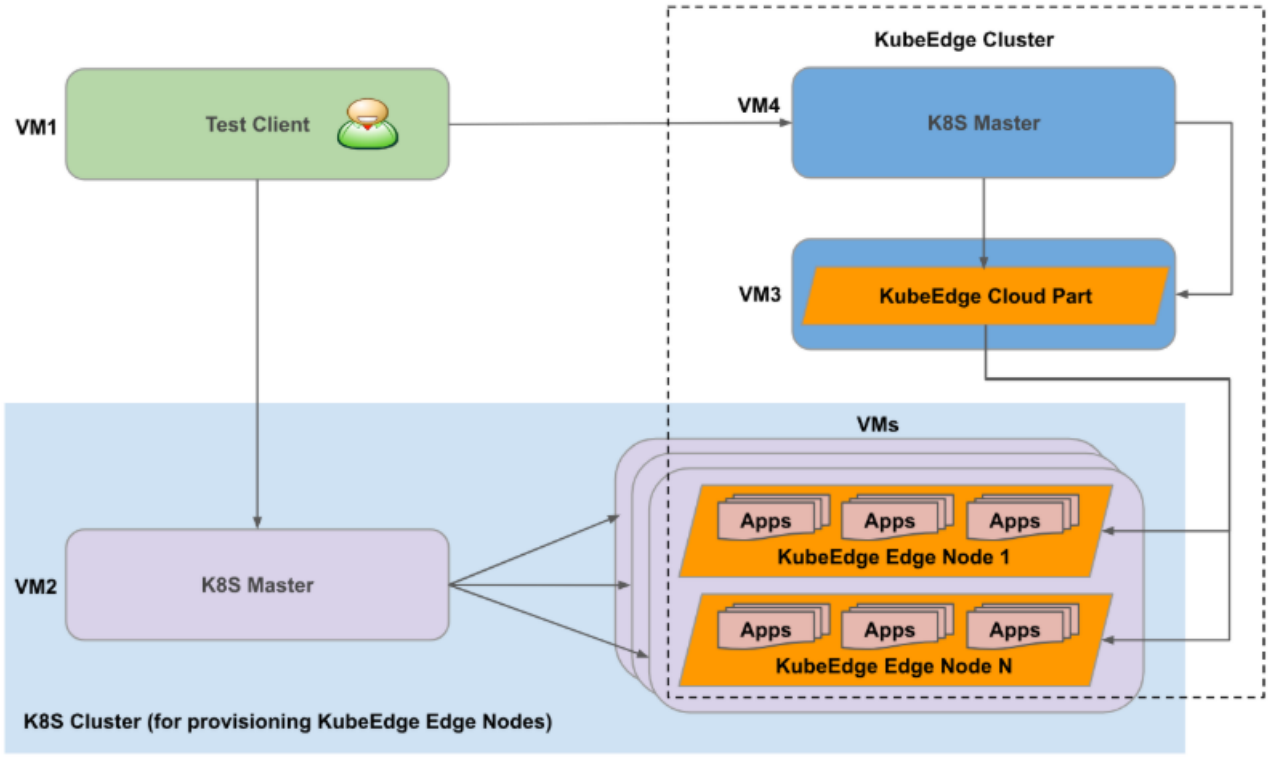
What's Next --- EdgeSite

- Enable customer to run a lightweight K8s cluster at edge
- KubeEdge agent can work with any K8s master like K3S server
- The KubeEdge pluggable module framework

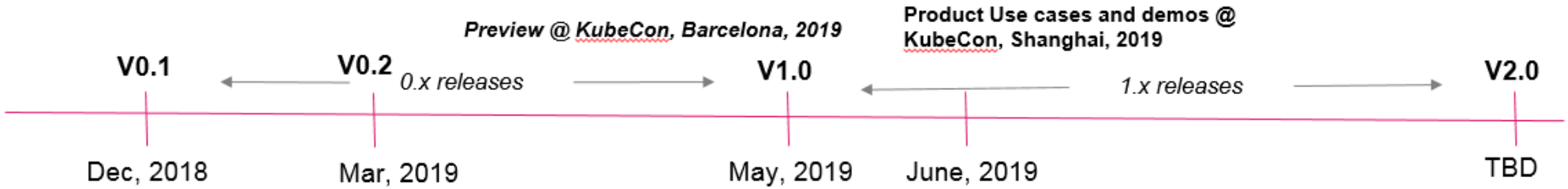


What's Next --- Perf and Scale Evaluation

- Evaluate the latency and throughput between edge and cloud
- Scalability
  - How many edge nodes can a cluster support
  - How many pods can run on an edge node. E.g. Raspberry-pi



Roadmap



Both Edge and Cloud open sourced including:
1.A lightweight agent
2. Kubernetes core primitive support, e.g. Node, Pod, Configmap, Secrets etc.
3.Device twin and MQTT protocol for IoT devices talking to Edge node
4.Loosely coupled edge/cloud communication and data sync channel
5.Run native containerized applications

1. Service mesh enabling network for data plane
2. Evaluate and enhance performance and scalability
3. Kubernetes based Device Management through CRD
4. Security integration with SPIFFE/SPIRE

1. Enable monitoring and telemetry
2. Standardization of Edge – Cloud Communication
3. Support more device protocols
4……

KubeEdge in the community

- K8s IOT/Edge workgroup
- Better integration with existing open source IoT platforms
  - Eclipse Hono – connectivity
  - Eclipse Ditto – digital twin
- Collaboration with other open source Edge efforts
  - Eclipse ioFog
- Collaboration with other working groups
  - Akraino
  - LF Edge