Akraino Release 4 - EALTEdge – Enterprise Application on Light Weight 5G Telco Edge

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EALTEdge Overview

Akraino approved blueprint under 5G MEC system Blueprint Family. This platform meant to be leveraged by Telecom operators to provide edge computing capability to it's enterprise users.

Overall objective of blueprint includes:
- Edge Platform with Management: Provide a edge computing platform along with application orchestration & management to host enterprise applications on Telco Edge.
- Empowering developers to innovate & ship faster: Provide platform for enterprise application developers to develop, test, package & onboard their applications easily & quickly
- Rich platform capabilities and features: Multi-Tenancy, Network-Isolation, DNS, LB, Dynamic Orchestration, Network Capabilities exposure.
- Enterprise specific sample usecase along with platform capabilities: ROBO, PCB vision use case, Backup & Restore, Object/Defect detection
- Easy Deployment & Maintenance: OCD, CLI, Portals
- Heterogeneous deployment on Multi-Arch & Multi OS.

BP is leveraging EdgeGallery as its upstream project to provide Edge Computing platform & management; developer platform/ App store. Also it intends to use other BP in same BP family to enable features like dynamic & flexible traffic offloading.
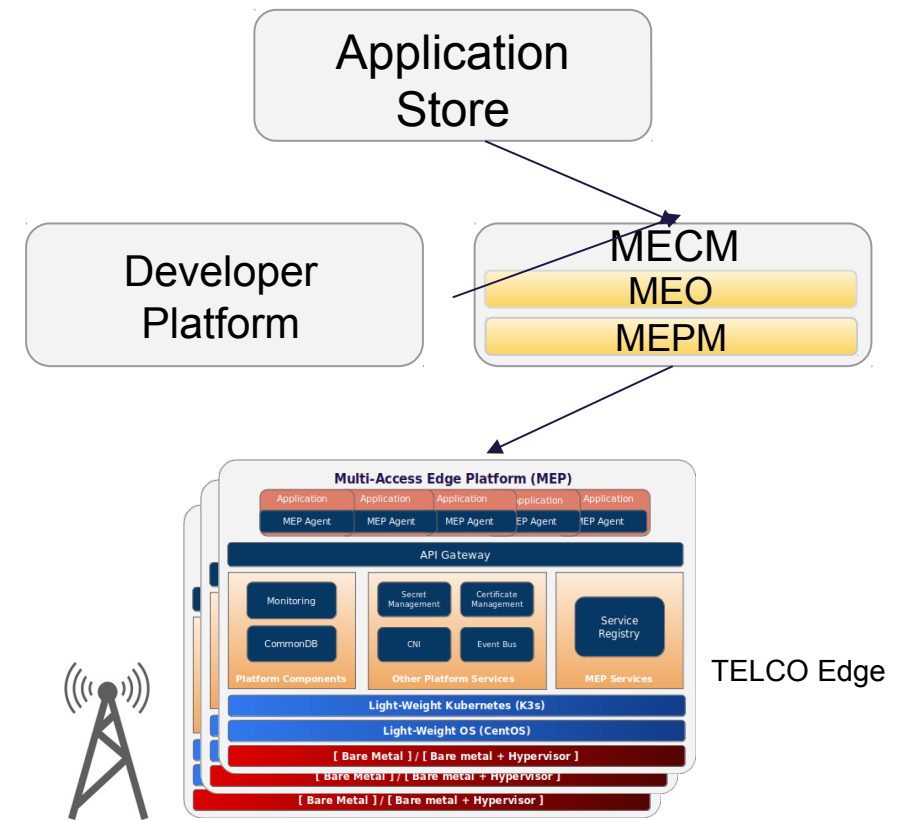


EALTEdge Building Blocks (Akraino Release 4)

MEP: Autonomous, Rich in Platform & network capabilities, Support heterogeneous architecture
MECM: Application orchestration, Application LCM, FCAPS, Policy driven closed Loop
MEC Developer Platform: Provides Tool Chain, SDKs, APIs & Sandbox features for application development, packaging and testing.
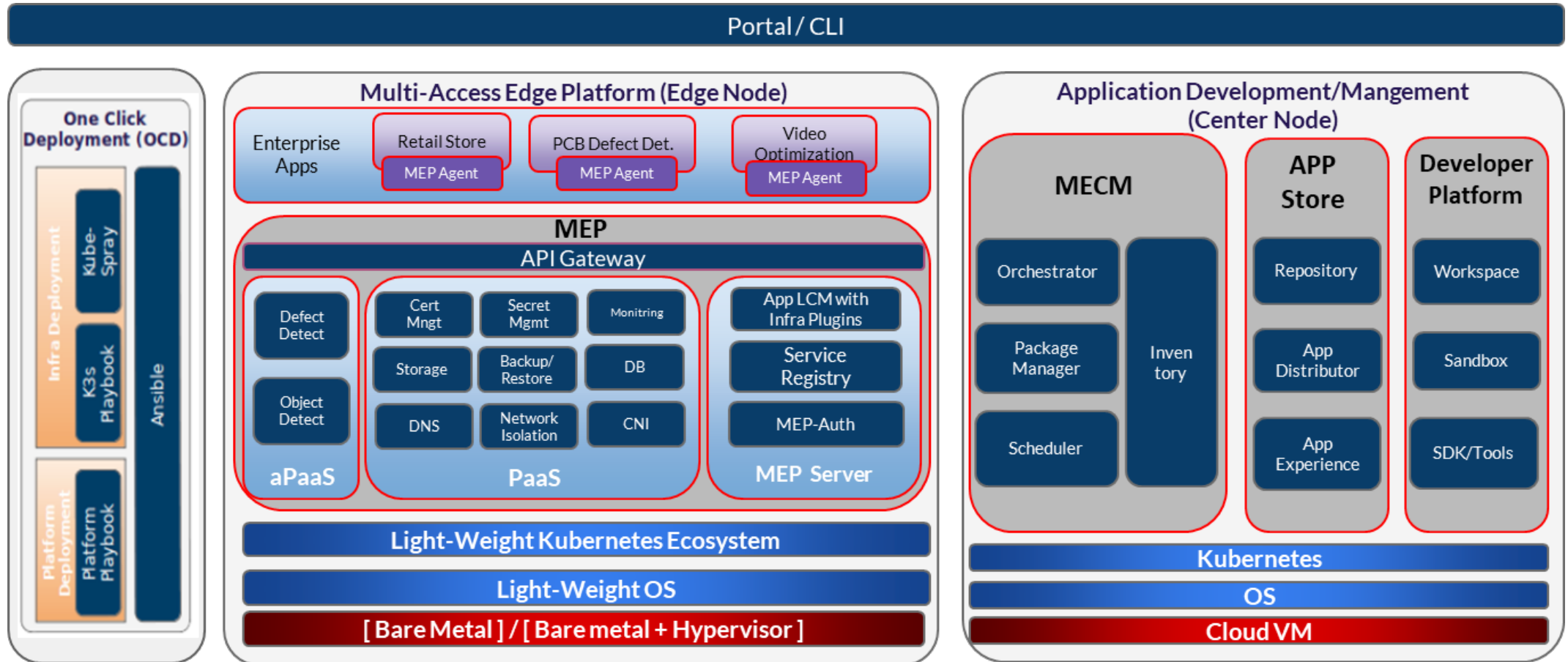**MEC App Repository:** Unified App Package Format, Standardized API Between Operator App Store and MECM

EALTEdge R4 Enhancements
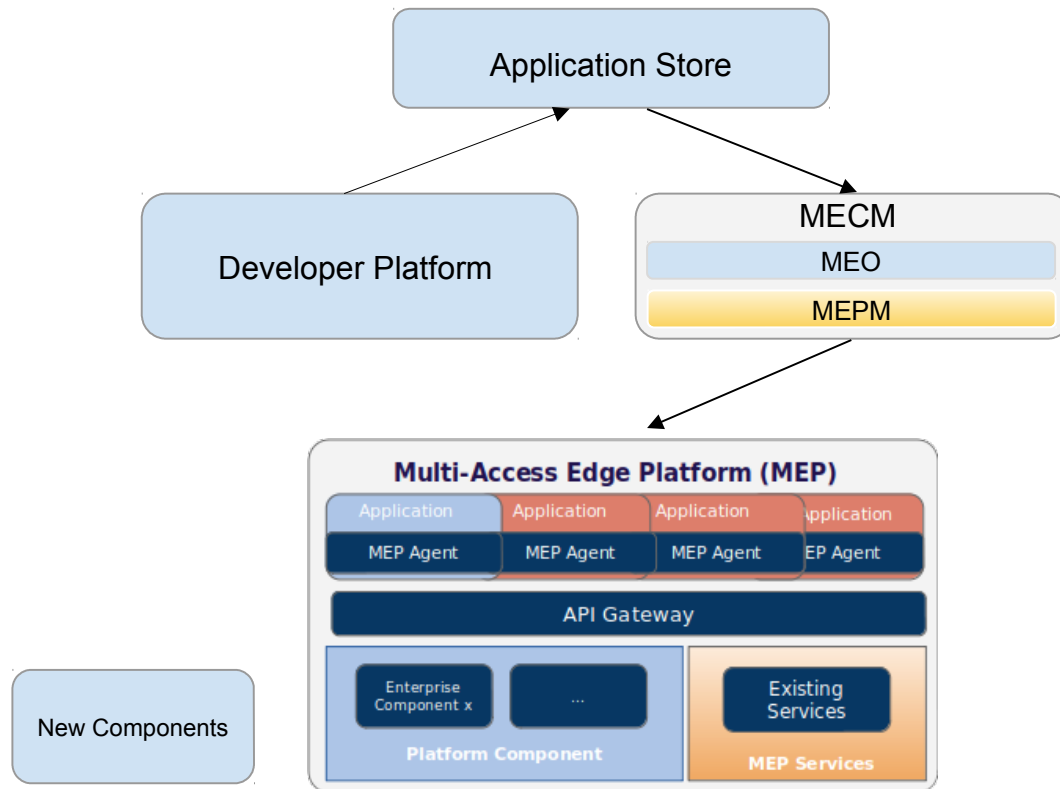
❖ Leverage EdgeGallery as an upstream to add following components to the Stack
  ➢ Application/MEC Edge Orchestrator
  ➢ Developer Platform & Application Store.
  ➢ Developer & Tenant Portals
  ➢ Add features like network isolation, DNS support, LB.

❖ ROBO usecase development on EALTEdge:
  ➢ PaaS: Light weight storage. Backup and Restore (scheduled backup/ disaster recovery) for Remote sites
  ➢ aPaaS: Object Detection service for Retail store Inventory
  ➢ Example App: Retail store inventory management

R4 Software Stack

Portal / CLI

One Click Deployment (OCD)

Infra Deployment
- Kube-Spray
- K3s Playbook

Platform Deployment
- Platform Playbook

Ansible

Multi-Access Edge Platform (Edge Node)

Enterprise Apps

Retail Store	PCB Defect Det.	Video Optimization
MEP Agent	MEP Agent	MEP Agent

MEP

API Gateway

aPaaS
- Defect Detect
- Object Detect

PaaS

Cert Mngt	Secret Mgmt	Monitring
Storage	Backup/Restore	DB
DNS	Network Isolation	CNI

MEP Server
- App LCM with Infra Plugins
- Service Registry
- MEP-Auth

Light-Weight Kubernetes Ecosystem

Light-Weight OS

[Bare Metal] / [Bare metal + Hypervisor]

Application Development/Mangement (Center Node)

MECM
- Orchestrator
- Package Manager
- Scheduler
- Inventory

APP Store
- Repository
- App Distributor
- App Experience

Developer Platform
- Workspace
- Sandbox
- SDK/Tools

Kubernetes

OS

Cloud VM

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R5 Plan

Upgrade to EdgeGallery 1.1 release to add following features:
➢ VM based workload support.
➢ Autonomous Edge site with Edge Portal.
➢ Enhancement to Developer Platform with enriched tool chains & application test platform.
➢ Multi-Tenancy support.
➢ UPF integration framework.

Enterprise use case & capability enhancements
➢ Develop/Integrate more enterprise applications
➢ Add platform capabilities for enterprise use cases

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EALTEdge Links

EALTEdge Wiki:

https://wiki.akraino.org/display/AK/Enterprise+Applications+on+Lightweight+5G+Telco+Edge

EALTEdge Code:

https://gerrit.akraino.org/r/admin/repos/ealt-edge

Weekly meeting on every Monday @06:30 AM PST time.

https://zoom.us/j/885308032

Release 4 Documents

EALTEdge Rel 4 Datasheet
R4 - API Documentation Enterprise Application on Lightweight 5G Telco Edge (EALTEdge)
R4 - Architecture Documentation of Enterprise Applications on Lightweight 5G Telco Edge (EALTEdge)
R4 - Installation Documentation of Enterprise Applications on Lightweight 5G Telco Edge (EALTEdge)
R4 - Release Notes of Enterprise Applications on Lightweight 5G Telco Edge (EALTEdge)
R4 - Test Documentation of Enterprise Applications on Lightweight 5G Telco Edge (EALTEdge)

Thanks