R4 - Release Notes of Enterprise Applications on Lightweight 5G Telco Edge (EALTEdge)

Summary

Enterprise Application on Lightweight 5G Telco Edge is a blueprint under 5G/MEC system blueprint family. It intends to provide a edge computing platform along with application orchestration & management to host enterprise applications on lightweight 5G Telco Edge. BP also intend to provide platform for enterprise application developers to develop, test, package & onboard their applications easily & quickly, thereby empowering developers to innovate & ship faster. Also eventually BP aims to provide platform capabilities and features for "MEC in an Enterprise Setting"

This release focus has been majorly to add following main components/features

1. Application orchestration with support for Multi Tenancy
2. Platform for Application Developer for faster development, test, packaging and onboarding
3. Application repository to launch applications.
4. Platform components & application for ROBO use case
5. Add platform features like DNS, LB, Network Isolation.

Release Scope
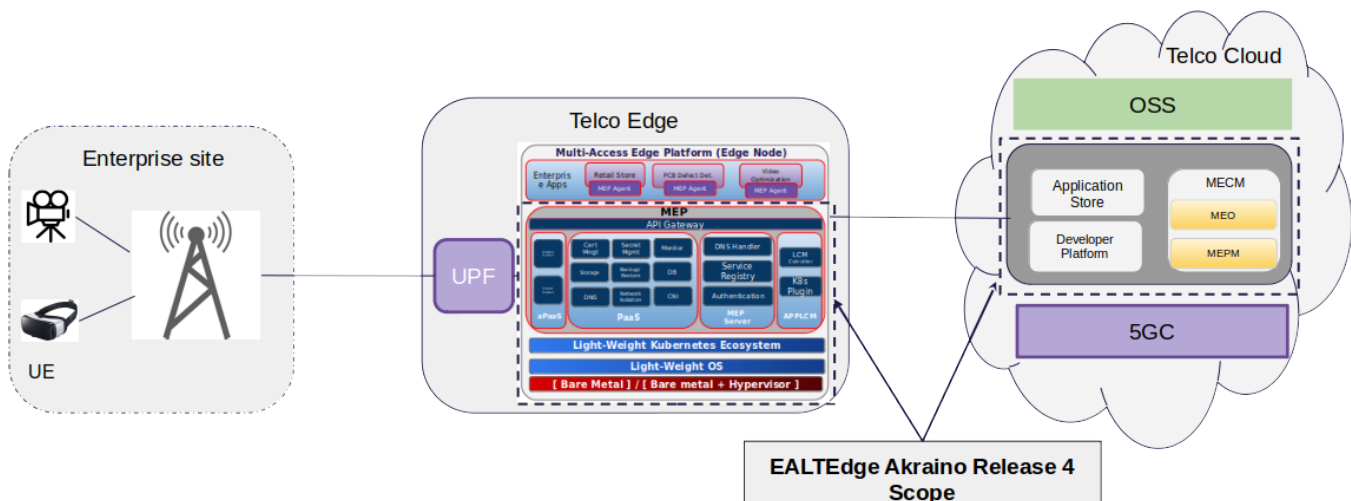
The edge computing platform(s) (MEP) needs to be installed at the telco edge(s) and Application development/management related components (MECM (MEO+MEPM), AppStore, Developer Platform) needs to be installed in Telco's cloud (private/public). Edge computing platform (MEP) provides a platform as a service environment for running "Enterprise Applications"

In order to be useful in this release, BP requires following pre-requisites:

- 5G RAN & UPF to enable connectivity & have configurations based on use case need.
- Also 5Gc and OSS system needs to be in place with desired configurations.
- Additionally need following configuration on UPF
  - DNS Redirection rules (for redirection to DNS server hosted on BP's Edge Platform)
  - Traffic rules to enable communication with Enterprise application hosted on Edge Platform.

Note:

1. 5G RAN, UPF, 5Gc, OSS are not in scope of BP.
2. In order to test this BP functionality in LAB environment a 3 node setup with Traffic generator (or any IP based UE) direct connection with Edge Platform would be sufficient and same is done in BP validation Lab (R4 - Test Documentation of Enterprise Applications on Lightweight 5G Telco Edge (EALTEdge))

What is released

Components of the release (Akraino new)

As part of this release EALTEdge blueprint released below mentioned components:

OCD (One Click Deployment) Node Components

- Ansible-playbook based single command for EALTEdge environment installation.
- Command Line Interface for installation of various components of EALTEdge Platform.

CENTER Node Components

- MECM
- Appstore
- Developer Platform

EDGE Node Components

- MEP Agent
- MEP Server
- Applcm (MEPM)

Note: For details, please refer to Architecture Document (R4 - Architecture Documentation of Enterprise Applications on Lightweight 5G Telco Edge (EALTEdge)#PlatformArchitecture)

Dependencies of the release (Upstream Projects, Patches)

S. No	Software	Version	Remarks
1.	Edge Gallery	0.9	
2.	Kubespray	2.14.2	
3.	Docker	19.03+	
4.	Kubernetes	v1.17.2	
5.	K3S	1.19.4+	
6.	Helm	3.0.2	
7.	Grafana	7.1.1	
8.	Calico	3.16.5	
9.	RabbitMQ	3.7	
10.	Prometheus	9.3.1	
11.	Vault	0.5.0	
12.	Cert-Manager	0.15.0	
13	OpenEBS	2.3.0	
14.	Velero	1.5.2	
15.	InfluxDB	2.0	

Upgrade Procedures

Not Applicable

Release Data

Enhancements

Not Applicable

Functionality changes

Not Applicable

Upstream Software Version Changes

Not Applicable

Features

#	Name	Category	Description
1.	Lightweight MEC	Platform	Lightweight MEC solution including Edge (MEC Host) & Platform Manager (MEPM)
2.	OCD	Deployment Tool	One click deployment of Center & multiple edge nodes
3.	Mutli-Arch and Multi-OS Support	Platform	Heterogeneous deployment with support of Multi-Arch & Multi OS.

4.	Bootstrap Script	Platform Feature	Installation scripts for EALT Platform
5.	Secret and Certificate Management.	Platform Feature	Cloud Native Secret and Certificate Generation and Management
6.	Edge Gallery and services	Platform feature	MEP, MECM (MEO + MEPM), Appstore and Developer platform features from Edge Gallery
7.	Light weight Storage	Platform Feature	EALTEDGE uses Open-Ebs for storage. It is a Kubernetes native hyperconverged lightweight storage solution.
8.	Backup and Restore	Platform Feature	EALTEdge uses Velero - An open source tool to safely backup and restore, perform disaster recovery, and migrate Kubernetes cluster resources and persistent volumes
9.	Common DB	Platform Feature	Time Series Database (InfluxDB)
10.	Network Isolation	Platform Feature	Provides separation of control, management and data plan
11.	DNS	Platform Feature	DNS server provided by platform
12.	Load Balancer	Platform Feature	MetalLB for LB

Version change

2.0.0

Module version changes

N/A

Document Version Changes

Version No.	Date	Author	Rationale
0.1	04-Dec-2020	EALTEdge Blueprint Team	First Draft

Deliverable

Software Deliverable

Software is available in https://gerrit.akraino.org/r/admin/repos/ealt-edge

Documentation Deliverable

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)

Fixed Issues and Bugs

Not Applicable

Known Limitations, Issues and Workarounds

System Limitations

N/A

Known Issues

N/A