Introduction

This document provides an overview of the Public Cloud Edge Interface (PCEI) blueprint as well as an overview of key features and implementations of PCEI in Akraino Release 7.

Overview

The purpose of Public Cloud Edge Interface (PCEI) Blueprint is to develop a **set of open APIs**, **orchestration functionalities** and **edge capabilities** for enabling Multi-Domain Interworking across the Operator Network Edge, the Public Cloud Core and Edge, the 3rd-Party Edge as well as the underlying infrastructure such as Data Centers, Compute Hardware and Networks. Interfaces between the functional domains are shown in the figure below:
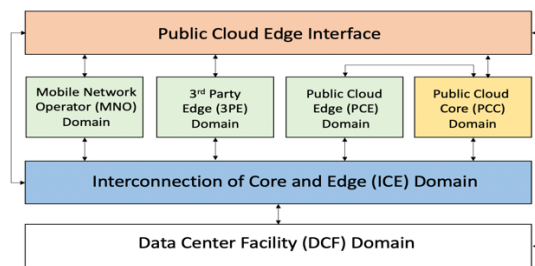

Figure 1. PCEI Functional Domains.

In R7 we use Akraino Public Cloud Edge Interface (PCEI) blueprint and MEC Location API service to demonstrate orchestration of federated MEC infrastructure and services, including:

- Bare metal, interconnection, virtual routing for MEC and Public Cloud IaaS/SaaS, across two operators/providers (a 5G operator and a MEC provider)
- 5G Control and User Plane Functions
- Deployment and operation of end-to-end cloud native IoT application making use of 5G access and distributed both across geographic locations and across hybrid MEC (edge cloud) and Public Cloud (SaaS) infrastructure
- By orchestrating, bare metal servers and their software stack, 5G control plane and user plane functions, interconnection between the 5G provider and MEC provider, connectivity to a public cloud as well as the IoT application and the MEC Location API service, we show how it is possible for providers to enable sharing of their services in a MEC Federation environment.
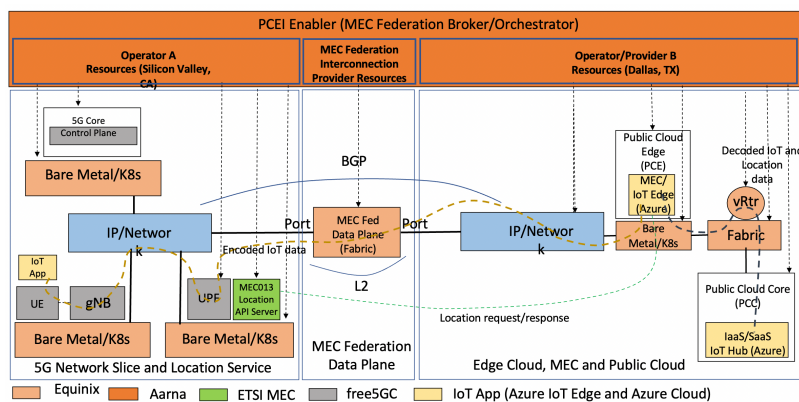

Figure 2. PCEI R7 MEC Federation Use Case.

PCEI in Akraino R7

- ❑ NBI APIs
  - ❑ GIT Integration
  - ❑ Dynamic Edge Cluster Registration
  - ❑ Dynamic App Helm Chart Onboarding
  - ❑ Automatic creation of Service Instance in EMCO and deployment of Apps
  - ❑ Automatic Terraform Plan Execution
  - ❑ Ansible Playbook Execution
- ❑ Workflow Engine
  - ❑ Camunda
- ❑ Integrated Terraform Plan Executor
  - ❑ Azure (PCC)
  - ❑ AWS (PCC)
  - ❑ Equinix Fabric (Interconnect)
  - ❑ Equinix Metal (Bare Metal Cloud)
  - ❑ Openstack (3PE)
- ❑ Integrated Ansible Playbook Executor
  - ❑ Kubernetes deployment on bare metal (Equinix)
  - ❑ VNF provisioning (Equinix) - NEW
- ❑ Equinix Fabric Interconnect
- ❑ Equinix Metal deployment
- ❑ Equinix Virtual Network Function (virtual router) deployment - NEW
- ❑ Multi-Public Cloud Core (PCC) Orchestration
- ❑ Kubernetes Edge
- ❑ Openstack Edge
- ❑ ETSI MEC Location API 2.1.1
- ❑ Cloud Native 5G Core, UPF and UE/gNB (simulated) Deployment – NEW
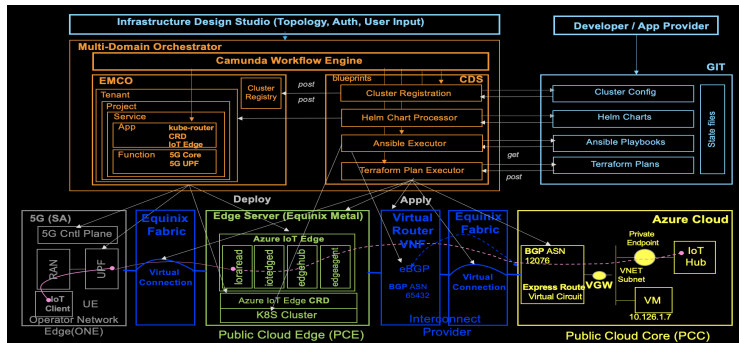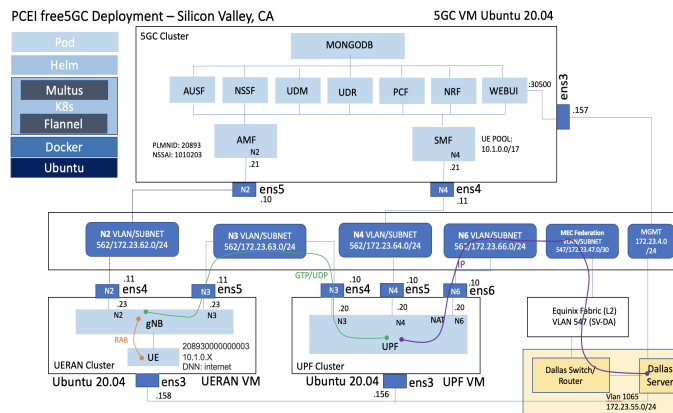

Figure 3. PCEI R7 Implementation.

Figure 4. PCEI R7 Free5GC Implementation.

For more information: https://wiki.akraino.org/x/IoMcB