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 5.

Overview

Akraino Blueprint: Public Cloud Edge Interface (PCEI)

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.

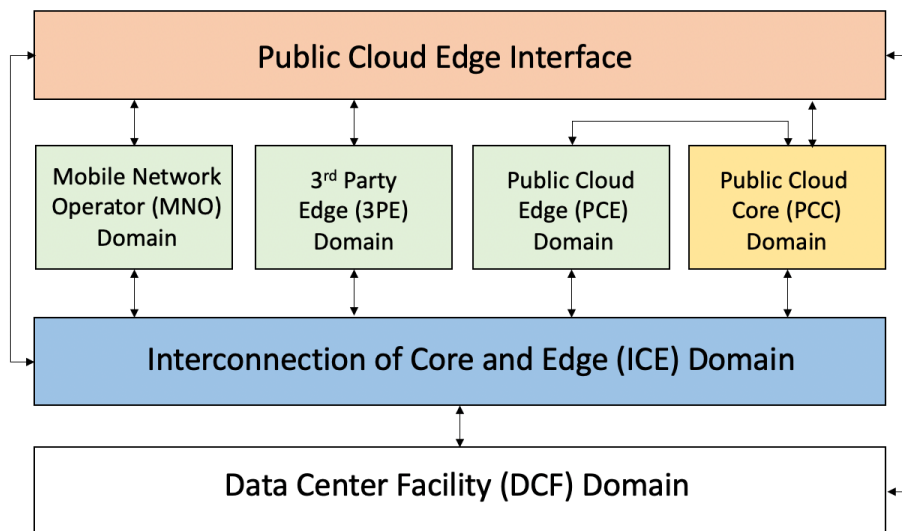Interfaces between the functional domains are shown in the figure below:

Figure 1. PCEI Functional Domains.

The detailed PCEI Reference Architecture is shown in the figure below. For the full description of the PCEI Reference Architecture please refer to the [PCEI Architecture Document](#).

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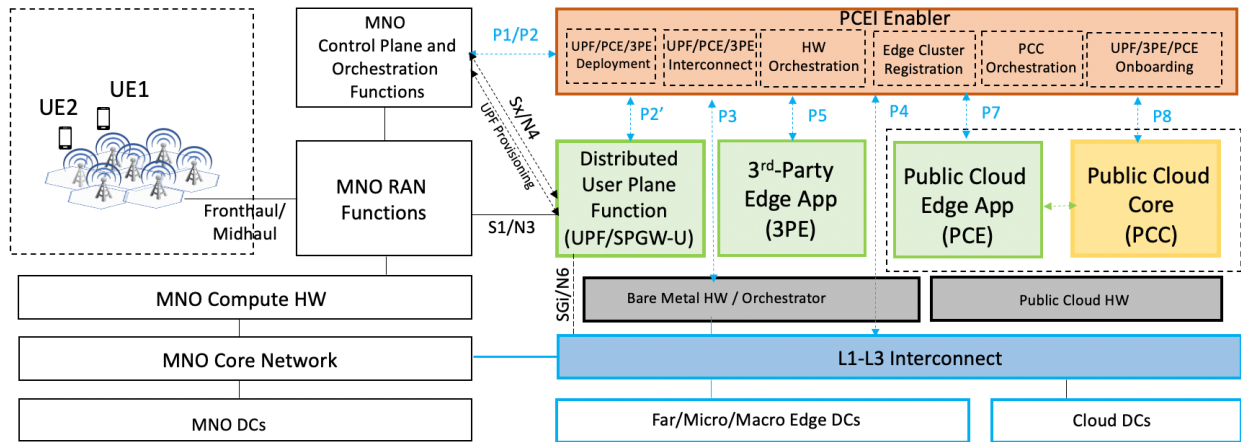
Figure 2. PCEI Reference Architecture.

PCEI in Akraino R5

Public Cloud Edge Interface (PCEI) is implemented based on Edge Multi-Cluster Orchestrator (EMCO) and Controller Design Studio (CDS).

Key features and implementations in Akraino Release 5:

1. **Controller Design Studio (CDS) Terraform Executor**. Enables automatic and North Bound Interface (NBI) API driven pull from Gihub and execution of Terraform plans, including:
    a. Public Cloud Core orchestration (e.g., AWS, Azure, GCP).
    b. Equinix Interconnect and Infrastructure Orchestration (Fabric l2/L3, Network Edge, Bare Metal).
    c. Openstack orchestration (VM deployments).
2. **CDS Helm Chart Processor**. Allows automatic and NBI API driven pull from Github of Composite Application Helm charts for:
    a. Onboarding Services and Apps to ONAP (a.k.a., EMCO – Edge Multi-Cluster Orchestration).
    b. Creation of Service Instances and Deployment of Kubernetes Apps on target Kubernetes clusters.
3. **CDS Kubernetes Cluster Registration Processor**. Allows NBI API driven automatic target cluster registration with ONAP (EMCO) for:
    a. Kubernetes application deployment on registered target clusters.
4. **North Bound Interface APIs** for:
    a. Cluster Registration into ONAP
    b. Terraform Plan Execution against target providers (Cloud, Equinix, Openstack).
    c. Helm Chart Onboarding into ONAP for Service and App Registration.
    d. Service Instance creation in ONAP and App deployment onto target Kubernetes clusters.
5. **Application and Network Function Deployments**. NBI API triggered deployment of Cloud Native Apps and Network Functions on target Kubernetes Edge Clusters:
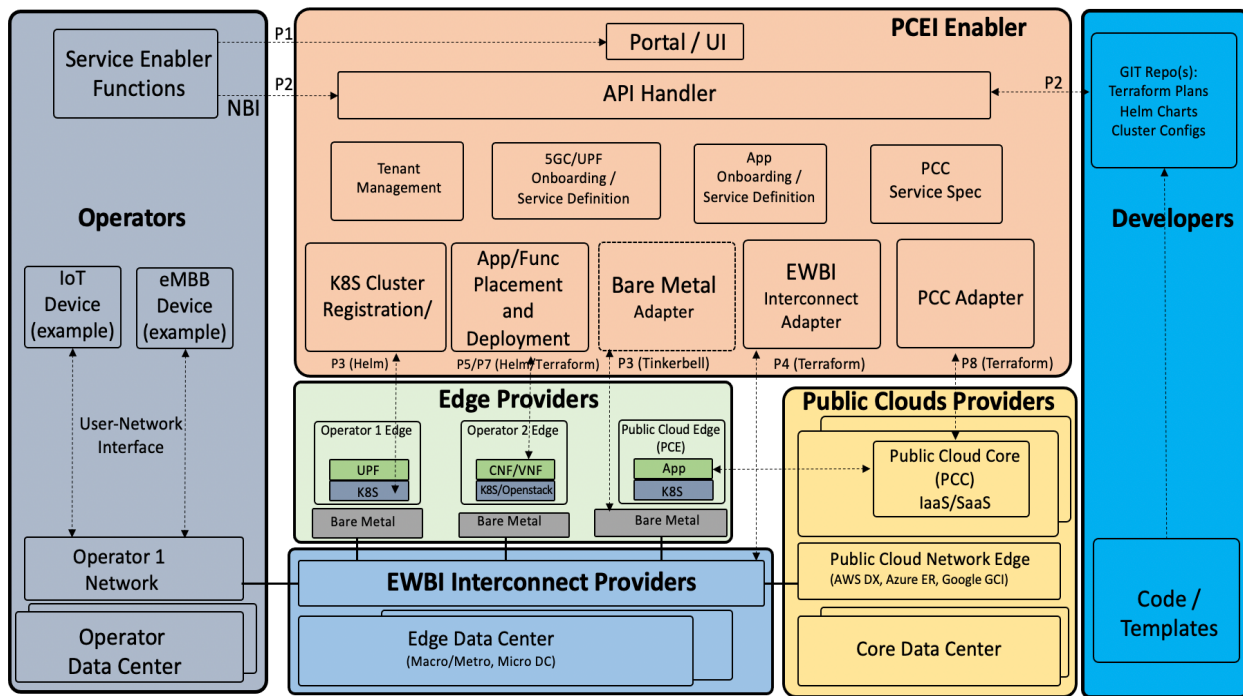   a. Azure IoT Edge.
    b. Free 5G Core.

Figure 3. PCEI R5 Implementation.

For more information:

https://wiki.akraino.org/x/ECW6AQ