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Hight Availability Cluster Management for Virtual Network Function over Multi-site Openstack Deployment

Related work

- Tacker is an Openstack based **NFV Orchestrator (NFVO)** with general purpose **VNF Manager (VNFM)** to deploy VNFs on OpenStack based platform
- Tacker is based on **ETSI MANO Architectural Framework**
- Currently, no High Availability cluster management service for VNFs is implemented in Tacker
- Multi-site Cloud scenario is limited in Tacker with only CRUD VNF operations.

New features

- We develop a **HA clustering engine** in Tacker to provide clustering service for VNFs over multiple Openstack deployments.
- Create a **VNF cluster** that include **Active** and **Standby** role for VNFs by using Tacker
- Support user-defined **placement policies**
- **Compatible with monitoring drivers** in Tacker to monitor status of cluster nodes
- Support **cluster-based recovery action** in the event of receiving event from monitoring drivers
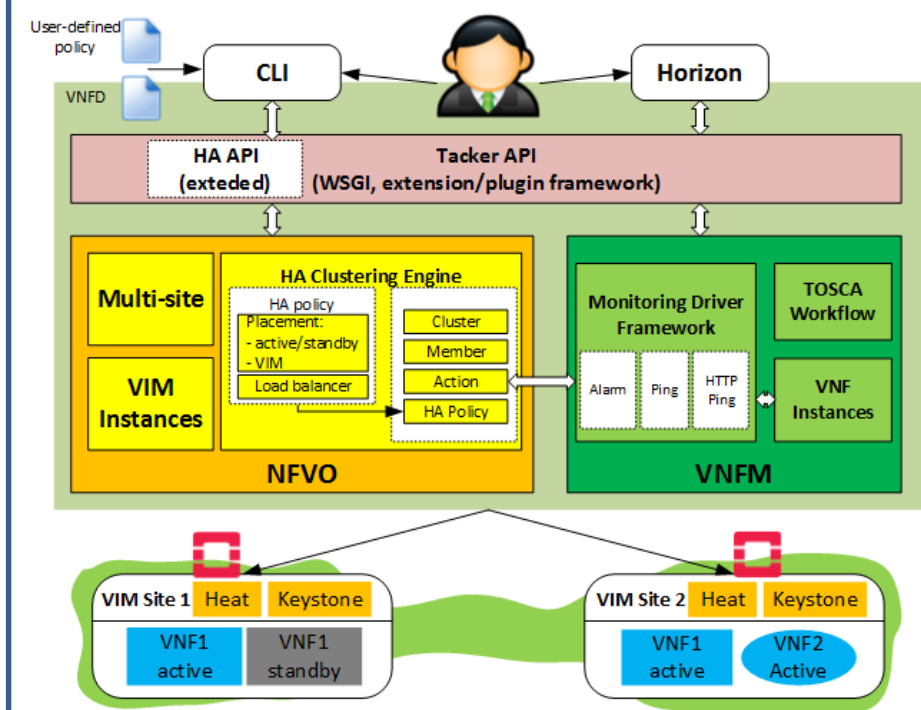
Future works

- Current version supports only CLI, need support for **GUI horizon**
- Integration with **Openstack Tricircle** to enhance multisite-based operations
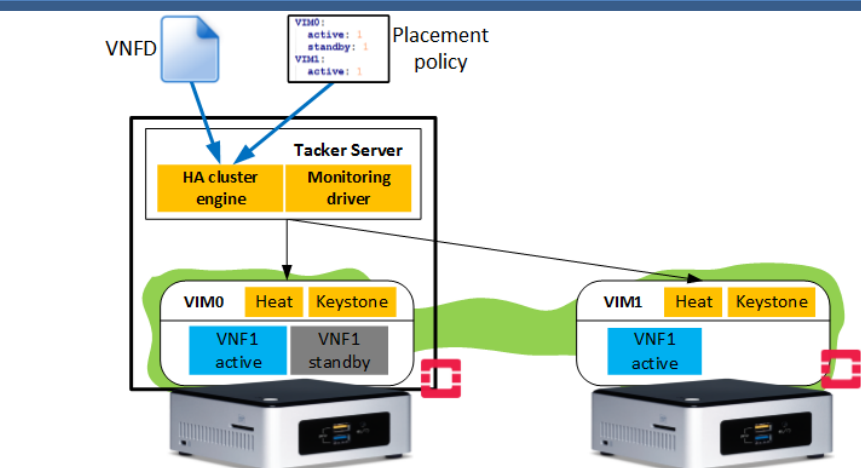
Acknowledgement

System Architecture

Demo scenario

- **HA cluster action**: VNF is disconnected from Tacker Server
  - **ACTIVE** is a set of Active VNF in deployed cluster
  - **STANBY** is a set of Standby VNF in deployed cluster
  - **if** $VNF_{fault} \in$ **ACTIVE:**
    - ☐ $|$**STANBY**$| \neq 0$:
      $VNF \leftarrow$ **STANDBY**.pop()
      ACTIVE.push(VNF)
    - ☐ $|$**STANDBY**$| = 0$:
      ACTIVE.push(new VNF_{active})
  - **if** $VNF_{fault} \in$ **STANDBY**:
    STANDBY.push(new $VNF_{standby}$)
- Destroy(VNF_{fault})