Edge Automation – Potential Strategies for Deploying ONAP at Edge

Evgeniy Zhukov, Netcracker

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Our Proposal

• Additional scope to be considered in ONAP for Edge Application Management – as per MEC guidelines
• ONAP deployment to suit edge automation scenarios
• MVP closely following the standards to enable interoperability.
Reference Implementation of Reference Architecture

- **Step 1. MVP “Orchestration Level”:**
  - MEAO
  - Ref Points: Mm1, Mv1

- **Step 2. “Management Level”:**
  - MEMPM-V
  - ME Platform LCM
  - ME App LCM
  - Ref Points: Mm2, Mm3*, Mv2, Mm6

- **Step 3. “Platform and Applications”:**
  - ME Platform
  - ME Application
  - Ref Points: Mm5, Mp1, Mp2, Mv3, Nf-Vn

- **Step 4. “External Interfaces”**
  - CFS Portal
  - UE Application
  - User App LCM Proxy
  - Ref Points: Mx1, Mx2, Mm8, Mm9

- **Step 5. “Network Edge”:**
  - Ref Point: Mp3
ONAP SO for ETSI MEAO

Support Distributed Cloud Application Orchestration
MEC – is a prune and refactored ONAP instance

ONAP instance (VNF LCM) → prune and refactoring → Light ONAP Instance (AF LCM)
Potential ONAP Edge Deployment Scenarios

MVP1 – current candidate
MVP2 – new proposal candidate

Edge without a local Orchestration Solution
Edge with local ONAP Orchestration Solution
Edge with Akraino connected to Central ONAP
Partner Edge with non-ONAP Orchestration Solution
ONAP at Edge Connected to a Partner Central Orchestrator

Central and Edge ONAP – not mean physical location of ONAP instance, but responsibility.
An MVP View for ONAP at Edge and Central

ONAP Central (End to End Scope)

- Orchestration
  - RT Catalog
  - WF Engine
  - Adaptors

- A&AI
  - Full Deployment

- Policy FW
  - PAP
  - PIP
  - PDP

- DCAE
  - Full Deployment

ONAP Edge (System Level Management)

- Orchestration
  - Catalog
  - WF Engine
  - Specific Adaptor

- A&AI
  - Inventory API
  - Inventory Query
  - Inventory Graph

- Policy FW
  - PDP

ONAP Project Impact

- SDC
  - Application Package, VNF Package, NS Package

- VNFD

- NSD

- Edge Infra service Orchestration

- Long term storage at central site based on pull model from Central

- PAP, PIP at Central, PDP at Edge

- Extended processing, analytics at Central, Metrics aggregation at Central, Controller for deploying DCAE MS from Central

- External API
  - SDNC
  - Generic Controller

- Optional Proxy connection with OSS/BSS

- External API
  - Common Controller SDK with essential MS or Light weight CM with Ansible
Typical Management Functionalities at Edge for various NFV based Use Cases (General) – Reference ETSI MEC

**System Level Management**

- **Edge Orchestrator**
  - Inventory Management
  - Catalog Management
  - Application Placement and LCM Triggering

- NFVO

- **Application LCM Proxy**

- **Interaction with OSS/BSS**

- **License Management**

- **Assurance (System Level)**

**Host Level Management**

- **Platform Manager (MEPM-V)**
  - Platform Element Mgmnt
  - Assurance (Host Level)

- **App LCM**

- **Platform LCM**

- **VIM**

**Available Functions in ONAP, but need adaptation for MEC.**

Scope of ONAP MVP. Can be aggregate for multiple Edges

Optionally placed at System Level as well

Scope of VNF vendor and infrastructure Provider
Summary – What we are suggesting?

• MEC recommends separation of System Level and Host Level Management
• Accommodate System Level Management Capabilities for Edge ONAP
• Enhance ONAP scope to handle Application Orchestration
  - Modelling constructs to support Application Descriptors
  - License Management of Applications
  - Application onboarding and instantiation workflows
  - End user dynamic application instantiation capability
Next Steps

• Wiki pages detailing (target: Dublin)
  - A study on the impact of Application Orchestration on ONAP
  - A study on aligning ONAP with MEC Architecture

• A use case proposal for edge application orchestration through ONAP (target: Dublin)
Thanks