Open Source MANO

5G Network Slice Orchestration with OSM
PoC Abstract

• **Deploy 2 Network Slices with some input parameters and operate them through Day-2 operations at Network Slice level**

  • **Deployment:** Each slice is modeled as a set of Network Services connected by networks or VLDs
    - Simple input parameters determine the type of slice to be created on demand
      - Experiment with orchestration of slice differentiation, such as for QoS, availability, security and/or assurance
    - The 2 slices share some Network Services (shared NS Subnets)
      - If the shared NS was already deployed, it won’t be deployed again
      - It will be reused, but initial configuration for the second Network Slice can still be done in the shared NS to let it know that new elements are present.

  • **Operation:** Running Day-2 primitives at Network Slice level (handled as a single object)
    - OSM, behind the scenes, maps them to a sequence of calls to NS primitives, which, in turn, are derived in calls to VNF primitives
PoC Participants

telenor  Telefonica  intel  redhat

ixia  MAVENIR  ORACLE

alTRAN  Indra  Tech Mahindra
1\textsuperscript{st} Slice: eMBB

Slice #1: eMBB

© ETSI 2019
Seeing the full picture

Slice #1: eMBB

RAN

Radio (shared) Subnet

PGW2 (dedicated) Subnet

Ixia

EPC1 (shared) Subnet

Mavenir EPC1

S1

S1MME

S1U

S5U

S5C

GY

S6A

SGI

GX

Gy (OCS)

Gy

S6a (HSS)

SGi (INET)

MGMT

S6A

SGI

GX

Gy

S6a (HSS)

SGi (INET)

Slice#2: URLLC

MGMT

S6A

SGI

GX

Gy

S6a (HSS)

SGi (INET)

MGMT

S6A

SGI

GX

Gy

S6a (HSS)

SGi (INET)

Ixia

Radio (shared) Subnet

PGW2 (dedicated) Subnet

Mavenir P-GW2

S1mme-2

S1u-2

Gy-2

S5u

S5c

S5U

S5C

GX

SGI

SGi (INET)

S6a-2

VNF

PNF

© ETSI 2019
Demo locations

• MWC 2019
  • GSMA booth (4A30): All time
  • Telefónica booth (3K31), “Ágora” Zone: Monday, 25.Feb, 11:30-12:15

• Collateral:
  • Presentation of the scenario:
    • http://newsletters.telefonica.com/icfiles/4/78277/183178/333387/_nw_test_mailing/b250aaf8584f6662786cb14c/20190224%205g%20orchestration%20with%20osm.pdf
  • Demo video: https://youtu.be/B56dW8opIRU
Some takeaways and lessons learnt

• OSM is intended to facilitate the management at Network Service or Slice levels, coordinating behaviors of different components

• In OSM, there are no fundamental differences between a VNF, a PNF or a Hybrid Network Function (HNF)

• OSM does not mandate specific protocols to interact with the Network Functions
  • This adaptation is handled at charm level (bundled in the NF Package)
  • Charms usually leverage on pre-existing libraries to support the most common types of communication

• The VNF provider does not (and should not) need to known service provider’s NFVI+VIM upfront
  • OSM descriptor (bundled in the package) is sufficient to feed OSM with all information that is required

• The VNF vendors must have a well-known procedure to automate the different LCM aspects of the VNF
  • Clean delimitation of Day-0 vs. Day-1 vs. Day-2 is critical to make the process repeatable
  • It is critical to avoid hardcoded values (identify parameters instead)
  • Elaboration of VNF Packages by the own VNF developer is highly recommended to avoid reverse engineering
  • The VNF vendor should have a clear automation strategy across its organization and product lines
Next step: OSM capability towards cross-domain Orchestration
CONTACTS:

Antonio Elizondo (antonio.Elizondo@Telefonica.com)
Pål Grønsund (Pal.Gronsund@telenor.com)