DevOps in Service Chains and 5G Network Slices

*OSM POC DEMO*

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MPLS World Congress, March 2017
Demo Participants

- Service Provider sponsor:
  - [telenor](#) Led by Pål Gronsund – OSM TSC

- Vendors involved:
  - [intel](#)
  - [netrounds](#)
  - [RIFT.io](#)

- Open Source initiative:
  - [Open Source MANO](#)

- System Integrators involved:
  - [ARCTOS LABS](#)
Presentation Outline

1. Driver for this demo/why important
2. Demo setup
3. Let’s see some live stuff!
4. Summary
Motivation and Drivers for this PoC

Ensuring good customer experience is a top priority for service providers

But - networks are becoming more complex with more frequent changes

“How do you ensure the service you are delivering is meeting the quality that the customer expects?”

- Heavy Reading, recent OSS/BSS Transformation article
Key Question: Does the Service Meet Customer Expectations?

1. Is the service delivered as defined in the contract?
2. How to monitor the service?
3. How to troubleshoot the service?
Test and Monitor Service End-to-End

Mobile Broadband Slice

Netrounds Virtual Test Agent (vTA) VNF

Main Data Center
Test and Monitor Service End-to-End

Mobile Broadband Slice

vTA → "Other operator" → vEPC₁ → vCache → vDPI → vTA

Main Data Center

Service Activation Testing
Troubleshooting
Quality Monitoring
Key Takeaways

1. Service models should include operational lifecycle aspects (how to test and monitor)

2. Test and monitor the delivered service – not just the infrastructure
PoC Demo Setup
Slicing to Meet QoS Requirements

SLICE 1: Broadband
KPI: Throughput
vEPC₁ vCache vDPI

SLICE 2: Massive IoT
KPI: Packet Loss
vEPC₂ vFW vGW

SLICE 3: Industrial
KPI: Latency
vEPC₃CP

vEPC₃UP vRouter vVPN
eNodeB Aggregation
Local Data Center
Central Office (CO)
Local Data Center
Transport
Main Data Center

netrounds
Assuring Expected QoS Levels

SLICE 1: Broadband
KPI: Throughput
vTA vEPC₁ vCache vDPI vTA

SLICE 2: Massive IoT
KPI: Packet Loss
vTA vEPC₂ vFW vGW vTA

SLICE 3: Industrial
vTA vEPC₃UP vRouter vVPN vTA
KPI: Latency vEPC₃CP

Active Traffic

eNodeB Aggregation
Local Data Center
Central Office (CO)
Transport
Main Data Center

Local Data Center

vTA – Netrounds Virtual Test Agent
PoC Demo Architecture

Orchestration
- Open Source MANO
- RIFT.io

API
- Test Orchestration
- Netrounds Control Center

openstack.

VNF vTA1  VNF1  VNF2  VNF3  VNFvTA2

NFVI Compute Host
- Intel NFVI
PoC Overview – More Detail

- Test coordination
- SLA aggregation

Slice 1
Slice 2
Slice 3
NSD

Orchestration
Open Source MANO
RIFT.io

API
Test Orchestration

Netrounds Control Center

Slice 1
Slice 2
Slice 3
Active Test & Monitor Template

Test coordination
SLA aggregation

UI

Active Traffic
VNF vTA1
VNF1
VNF2
VNF3
VNF vTA2

NFVI Compute Host
Intel NFVI
Pre-demo: Two Slices Already Instantiated

SLICE 1: Broadband
- Throughput

SLICE 2: Massive IoT
- Packet Loss

SLICE 3: Industrial
- Latency

Active Traffic

eNodeB Aggregation
Local Data Center
Central Office (CO)
Main Data Center
Local Data Center

vTA – Netrounds Virtual Test Agent
Let’s see some live stuff!
PoC Demo Flow - Recap

1. Design/Onboard VNF and NS Packages
2. Onboard to VIM
3. Instantiate NS
   > Stitch chain
4. Start VNFs/VTAs
5. VTA call home
6. Run activation test
7. Start Active Monitoring
8. Read Network Service SLA Status

Orchestration

VNF, VTA1, VNF1, VNF2, VNF3, VNF, VTA2

NFVI Compute Host

Intel NFVI

NSD Primitives

Service Instantiated

JSON RPC (NETCONF/YANG)
Key Takeaways

1. Service models should include operational lifecycle aspects (how to test and monitor)

2. Test and monitor the delivered service – not just the infrastructure
Conclusion: Add active testing to the service model
And active monitoring
Start your journey today

Service models should include operational lifecycle aspects (how to test and monitor)

Test and monitor the delivered service – not just the infrastructure

Implement automated service activation testing already today
Thank you!

See the demo in Intel’s booth and visit us in the exhibition.