Placement of services in distributed clouds

OSM Official PoC
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PoC proposal – placement of services in distributed cloud

• Introduction
• PoC overview and architecture
• Demo scenarios
• Key takeaways
Introduction

• Joint PoC between Arctos Labs, Netrounds, WindRiver & Telenor

• Address automated optimization of VNF placement using constraint- and cost models
  • Achieve required latency
  • At lowest possible cost
Constraints and how they apply

- Multiple SW components with specific requirements
- Multiple links with specific requirements
- Cost drivers are thus different for each component / link
- Optimal place is not the same for all SW parts – the distribution challenge
The underlying network is complex

- Individual service requirements and customer locations vary
- 10’s of thousands of (potential) PoP’s for deployment – multi-domain
- Network evolve – new nodes emerge, topology rebuilt etc
- Network status vary – links go down, nodes go faulty

DC – Data Centre
R – Router
CO – Central Office
BTS – Base Station
CPE – Customer Premise Equipment
Costs depend on placement – the case of optimization

• Cost of links & compute depend on resource amount available, location etc

• I.e. Service cost optimization is dependent on placement decision
Capture link latency in real-time

- Using Netrounds control center and test agents to capture link properties
  - Latency, jitter, etc
- Feed such information into the placement engine as base for decisions
PoC Dashboard

- Visualization of selections on map
- Scenario control
  - simulation or full instantiation
  - selection of optimization criteria
- Selection of different services and their different constraints
- Inventory & Cost model
PoC scenarios (examples)

Deployment of latency relaxed service in DC with lowest cost

Deployment of latency-critical service where needed VNF’s are moved closer to customer

Re-deployment of latency-critical service in case of DC failure
Key takeaways

• Constraint models to complement NSD’s to capture service performance requirements

• Zero-touch placement of VNF workloads based on latency requirements

• Placement decisions using real-time latency measurements

• Placement optimization using cost models to capture link and compute costs

• Placement optimization assurance to continuously re-evaluate in case of DC or link failures