Commercial VAS Domain Deployment Over RHOSP Governed by OSM

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Company Overview

Under its Canvas® brand, Telenity provides two product groups fully based on a telecom grade Common Operating Environment (COE)

<table>
<thead>
<tr>
<th>Product Lines</th>
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<tbody>
<tr>
<td>VAS Consolidation Platform</td>
<td>Digital Services Platform</td>
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Go-To-Market Models

<table>
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<tr>
<th>CAPEX</th>
<th>Managed Services</th>
<th>Revenue Share</th>
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Founded in 2000

35+ Countries
40+ Operators
1+ Billion Subscribers

4 OFFICES

USA – Turkey – India – UAE

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Our Product Portfolio
Our Customer Base

- ALBtelecom
- airtel
- Azercell
- bh
- BSNL
- etisalat
- FASTWEB
- Geocell
- Idea
- Jawwwal
- Kcell
- life:
- lifecell
- mobily
- Moldcell
- nextel
- AT&T
- ooredoo
- Orange
- Qualcomm
- smartfren
- TURKCELL
- Türk Telekom
- vodafone
- Zain
Our NFV Experience / History

2017 – 2018

- OSM 4.x, 5.x
- OSP (Queens, Rocky)

2019 – 2020 – 2021

- OSM 6.x, 7.x, 8.x
- OpenBaton, Tacker
- RHOSP 13
- vCloud 8.x

- HTK 5G NFV
- Funded Research
- Commercial / MEA

- Commercial / CA
- Commercial / MEA

- OSM 9.x
- RHOSP 16
- CBAM 19.x, 21.x
- vCloud 9.x

• Teydep NFV
• Funded Research

• HTK 5G NFV
• Funded Research
• Commercial / MEA

• Commercial / CA
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• Teydep NFV
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• HTK 5G NFV
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• Commercial / CA
• Commercial / MEA
VCP Features & Functionalities

- Flexible Licensing Framework
- Common Provisioning Framework
- Unified Charging Framework
- Common OA&M Framework
- Centralized Screening Management
- Unified KPIs, Alarms, Reporting Framework
- Unified Portals (Admin, Customer Care, Self Care)
VCP Operating Environment

- **NFVI / VIM**
  - RedHat RHOSP 13.x
  - 1K x vCPU, 3.5T RAM
  - Local & Shared Storage
  - RHEL 7.x

- **VNFM / NFVO [MANO]**
  - ETSI OSM 8.x
  - 8 x vCPU, 16G RAM
  - Local Storage Only
  - Ubuntu 18.x
VCP VM Placement
Constraints / Challenges Faced

- Handling Live Traffic
- Docker Images*
- Proxy Charms [Hooks]*
- Pre-Defined Networks & IP Addresses
- Pre-Defined Compute Flavors
- Placement Policies [COLOCA TED | ISOLATED]
- Modeling / Packaging / APIs (Standards Alignment)

* Due to Environmental Restrictions on Prod Setups
VNF Design & Implementation

VNF: vSMSC

VDU < smsc >
- eth0
- eth2
- eth3
- eth4
- eth1
- eth5
- smsc-dmi
- smsc-rmi
- smsc-ccn
- smsc-ext
- smsc
- osm
- sfedb
- ext

VDU < sfe-db >
- eth0
- eth2
- eth3
- eth1
- sfedb-bb
- smsc
- osm
- sfedb
- ext

Connection-point:
- id: ssmc.smcc
  name: smcc.smcc
  type: VPPDN
- id: ssmc.smfd
  name: smcc.smfd
  type: VPPDN
- id: ssmc.smcc
  name: smcc.smcc
  type: VPPDN
- id: ssmc.smcc
  name: smcc.smcc
  type: VPPDN
- id: ssmc.smcc
  name: smcc.smcc
  type: VPPDN
- id: ssmc.smcc
  name: smcc.smcc
  type: VPPDN

VNF: vSMSC
Migration Strategy

• Initial Deployment
  • 10 x Messaging/VAS Apps
  • VM based [80 x VM per Site]
  • Highly-Available [N + 1; no SPoF]
  • Geo-Redundant Operations [2 x A/A Sites]

• Migration Strategy
  • 16 x VNF/NS Packages
  • VNF based [no PNF/CNF/KNF]
  • Gradual [Incremental] vs Forklift Approach
  • Fine-Grained [One App and/or One VM at a time]
Migration vs Rollback Procedure

**MIGRATION:**

- Stop VMs to be replaced on RHOSP
- Take snapshot backup of VMs to be replaced
- Delete VMs to be replaced by VNFCs
- Make sure RHOSP resources used by these VMs are released
- Instantiate NS/VNF on OSM side
- Apply Day-0/1/2 config procedures to newly created VMs

**ROLLBACK:**

- Delete NS/VNF instances on OSM side
- Wait until all NS/VNF instances and related VMs are deleted
- Make sure RHOSP resources used by VMs are released
- Create new VMs from snapshot backup images
Day-0/1/2 Procedure Highlights

**Day-0**
- Users
- Passwords
- Flavors

**Day-1**
- Ports*
- Networks*
- Volumes

**Day-2**
- Policies
- Instances
- Metrics

DEPLOY
- CONFIGURE
- OPERATE
VCP VNF/NS Packages
VCP VNF/NS Instances
Areas of Potential Improvement

- More Flexible [Static | Dynamic] IP Address Assignment
- More Granular [VDU Instance Level] IP Address Assignment
- Dependency Handling
- Placement [Affinity | Anti-Affinity] Policy Support
- Out-of-the-Box API Collections
- Faster Standards Convergence / Alignment
- Config-Driven [Grantful | Grantless] Operation (?)
Thank You

Q&A