Open Source MANO

OSM EUAG PERSPECTIVE

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OPERATOR LED AND REQUIREMENTS DRIVEN

- MANO is about automation of network operator service/network design and build processes

- Two interrelated objectives for OSM
  - Open ‘industrial strength’ implementation
  - Open learning by doing

- EUAG gives vision and direction for OSM

- EUAG sets out release requirements
  - Release requirements have strong practical focus
  - 6 month release cycle

- Seeking to avoid the “all things to all people”
VALUE OF OPEN SOURCE

• Real learning by doing
• Some operator OSS is currently in-house or bespoke developed
  • Open source is a relatively simple next step
• Effective way of achieving systems which meet requirements
  • Standards are sometime opaque to whether they meet requirements
  • Standards are often susceptible to different incompatible interpretations
  • Key requirements may not be covered by standards
  • MANO standards are highly complex
LONG TERM VISION – AUTOMATION

- Automation across different the timeframes
  - Design and development - On-boarding
    - Full automation here is still some way off
    - Assisting and easing the process
  - Instance life-cycle
    - What can be changed in-life and what is immutable
    - Especially important when considering impact on higher layers
  - In-life
    - Performance – auto scaling etc
    - Resilience – fault tolerant load sharing
    - Service monitoring, assurance, and reporting
    - Still not properly brought in scope

- And across all layers
  - NS in NS, NS, VNF, VM, VL
  - Looking for flexible, robust, recursive framework
  - All this automation is policy driven
    - Policy must be executable

- Heterogeneous
  - Multi-VIM is essential but just the start
  - Multiple VL solutions
    - Multi-SDN controllers
    - Existing OSS
  - Flexible, robust, recursive framework
  - Plug-in architecture
HETEROGENEOUS REAL WORLD

End to end service with NFV component

Existing service component

NFV network service

Existing service component

VNF

Existing network function (eg WAN connectivity)

NFV network service with existing service component

Existing network function (eg WAN connectivity)

Existing management and orchestration

interworking

VNF

VNF

NFV MANO

interworking

Existing management and orchestration

NFV network service

VNF

VNFaaS

VNF

Client Operator

NFV MANO

VNFaaS control

Serving Operator

NFV MANO

VNF

VNF

NFV MANO

VNF

Serving Operator

NFV MANO

NFVIaaS control

NFVIaas

NFVI

Serving Operator

NFV MANO

Client Operator

NFV MANO

Existing systems

NFV services/functions

NFV MANO

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LEARNING BY DOING

standards

system development

service provider

standards

service provider

system development
RAPID FEEDBACK TO ARCHITECTURE AND STANDARDS

• We already have a running system
  • Rapid, continuous development with full support of CI/CD toolkit
  • OSM will be fully participating in the ETSI NFV Plugtest
• Using the NSD and VNFD IM
  • MAN001
    • Identified a number of ambiguities
    • A lot of important stuff is outside the templates
  • IFA011/IFA014
    • Fixes some problems by opens up many more questions

• Controlling resources
  • Need to abstract resource requirements into capacity parameters in SLA like form
  • Need availability/resilience in SLA like form
  • Mapped through layers with appropriate translation in each layer
  • Not clear how to use deployment flavours and affinity rules to do this
SECURITY

• Normal system features
  • Eg Role based authorisation, secure remote links within OSM and to VIMs

• Operational integrity
  • On boarding
    • Robust validation including validation of all process automation implied in descriptors
    • Catalogues accurate and up to date
  • Altering configuration in-life
    • Cannot change a VNF (or component NS) so composite NS doesn’t work
    • Can change VM, VNFC, VNF, component NS to allow autonomous management of component
  • Reliable and appropriate in-service monitoring
  • Fully accurate inventory database
Thank You

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