PoC Demo #1

ZSM ISG Interim Meeting
Kista, Sweden – Ericsson
July 11, 2018

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ZSM PoC #1, Demo #1 https://vimeo.com/279707642/619706d16c

The video is about 50m, first half is relevance/alignment to ETSI ZSM and second half is the demo.
Automated End-to-End SLA Management of multi-vendor, multi-domain, secure, VoLTE Network Service

The Story

- Congestion caused by DDoS results decreased voice quality in Network Service as per specified KPIs - fault is detected by Service Monitoring, which raises alarm
- Faults reported from one or more Domains via E2E Integration Fabric, shared with E2E Service Orchestrator, which correlates alarms to interpret events based on metadata and metrics to classify SLA violations (may involve multiple queries for additional KPIs)
- E2E Service Orchestrator makes policy-based decisions, which trigger commands (ETSI NFV standard LCM operations) issued back to Domain(s) for remediation via E2E Integration Fabric
- End-to-End Service Orchestrator queries Domain(s) via E2E Integration Fabric for Post-action application state and network telemetry for automated closed-loop control
  - Re-configured and assured Network Service may result in a Billing event, based on policies, which would be reported by End-to-End Service Orchestrator to Administrative Domain via E2E Integration Fabric
Functional Domains:

- EPC (Radisys/AWS Zone)
- IMS (Metaswitch/AWS Zone)
- Secure Traffic (Fortinet/AWS Zone)

Administrative Domain:

- Billing (Amdocs/On Premise) [Future Iteration]

E2E ZSM Framework-based Solution

- End-to-End Service Orchestrator (EnterpriseWeb)
- E2E Integration Fabric (EnterpriseWeb)
- E2E Network Service Modeling Environment (EnterpriseWeb)
  - Compose Network Services
  - Define SLAs using proposed FCAPS metadata and metrics to model conditions for events and then specify related actions (state machines)
  - Declare Service and Resource Monitoring Requirements as part of Service Topology
End-to-End Automation of Network and Service Management requires clear definition of Domain NBI to enable higher-level programmability

- **Domain NBI exposes controls to E2E ZSM Framework-based Solution**
  - Network Service Ordering and Configuration
    - End-to-End Service Orchestrator queries Domain(s) via E2E Integration Fabric and orders and configures existing Domain Network Services via exposed interface (Radisys EPC, Metaswitch IMS, Fortinet Firewall)
  - Service and Resource Monitoring Ordering and Configuration
    - End-to-End Service Orchestrator queries Domain(s) via E2E Integration Fabric and requests and configures existing Domain Monitoring Services via exposed interface (EXFO Service Monitoring probes / Infosim Resource Monitoring agents)

- **Domain NBI exposes data stream to E2E ZSM Framework-based Solution**
  - Return state/telemetry alarms as per configuration of Monitoring Services
4.2 The Principles

Principle 01: Modularity
Principle 02: Extensibility
Principle 03: Scalability
Principle 04: Model-driven, open interfaces
Principle 05: Closed loop management automation
Principle 06: Support for stateless components
Principle 07: Design for failure
Principle 06: Separation of concerns in management
ZSM Requirements based on documented scenarios

PoC Scenario and Use-Case cover 50% of requirements

Future iterations of PoC will cover additional Scenarios and Use-Cases to demonstrate broader coverage
PoC needs to align and make specific proposals to ZSM ISG Architecture in future contributions.
FCAPS policies modeled with standard metadata and metrics for consistent event-sourcing and handling

Model-based Event-driven Policy-controlled

Federated Processing

Lifecycle Management operations are abstracted out of use-cases for virtually-centralized control and high-level programmable behavior across multi-vendor, multi-domain use-cases.
Assumptions

Day 2 demo running multi-vendor, multi-domain Network Service
Day 0-1 onboarding & deployment out-of-scope of this iteration of PoC

Design Time

Compose End-to-End Network Service: NSD with a) Packages plus b) reference to an SLA, exposed by API to c) ZSM Framework-based Solution

a. **VNF Packages**: where Package is described as VNFD plus metric, plus relationships to VNFM/LCM, and standards-based interfaces exposed by an API

b. **SLA**: – model FCAPS events using metadata/metrics to configure policies, trigger actions

c. **ZSM Framework-based Solution**: implementation-independent, minimum viable XML data models of event, policies, actions

Run-Time

Demonstrate ZSM Framework-based Solution: As per PoC Use-Case / Story
Extended VNF Descriptor Example

PoC ‘Straw Man’ Information Model

Event - Model
Empty Event Data Model Template

Event - Instance
Populated Event Data Model

Domain

Network Service
- Domain References
- VNF(s)
  - Package Reference
- SLA References
- NSD

VNF Package
- Exposed State
  - Alarms
  - Metrics
- VNFM Model (Programmability Model)
  - LCM Operations
  - Map to Standards Based Interfaces
- VNFD

SLA
- Required State
- Alarms
- Metrics
- Policies
- Conditions
- Actions
- Workflows

Network Service Reference

SLA Reference

Trigger Data
- Alarms
- Metrics

Actions Taken

Populated Event Reference

Impacts
Generates

Consume

Map to

Issue Command Via

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FLEXIBLE, EXTENSIBLE, ADAPTABLE: TOWARDS A UNIVERSAL TEMPLATE FOR VNF ONBOARDING AND LIFECYCLE MANAGEMENT

September 2017
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