ONAP Platform Integration Test Strategy with External Systems

Integration Team
Review R1 VoLTE Use Case Testing with External Systems

The Special for VoLTE case:
- TOSCA based Models: TOSCA based VNF package imported to SDC
- E2E Service Orchestrator: SDN+NFV
- Integrate with multi-vendors commercial products as 3rd external system, such as VNFMs/EMSs/SDN Controllers/VIMs

How we did VoLTE use case E2E test in R1:
- In integration lab tested features not involved with external systems, other features could only be partially tested due to lack of external systems
- In CMCC physical lab, focused on testing e2e features with the external systems
- All tests were done manually
VoLTE Integration Test Strategy for R2+

Plan for R2+ VoLTE Use Case Testing:
- Step1: Implement EMS/VNFM/SDN Controller mock servers
- Step2: Automate feature/use case level test cases with mock servers
- Step3: Hook up automated tests with mock servers into CI/CD process
- Step4: Run E2E test automatically in physical lab with real external systems

General Suggestions:
• When a new external system is introduced by use case, the external system mock server should be provided before integration test starts
• Add/Enhance automated e2e use case tests with mock server to CI/CD
Mock SDN Controllers in VoLTE
Mock ONAP Drivers in VoLTE

ONAP

Common Services

A&AI

Inventor

GUI Portal

Virtual Function Controller (VFC)

SO

SDC

Distribution Service

Inventory Data CRUD

NS&VNF creation

NS/VNF Package

vnfdriver

emsdriver

MultiVIM

S-VNFM

EMS

Cloud

VNF

VNF

VNF

VNF
ONAP Platform S3P Test Methodology with External Systems

A ONAP runtime components with external system dependencies

MockServer is used to mock 3rd party external system dependencies

1. Setup Expectations
2. Load
3. Verify Requests
4. Verify State
5. Collect Resource Usage

ONAP Runtime Components in Production

External System 1

External System 2

External System 3

Test Tool Set

ONAP Runtime Components Under Test

Mock Server for External Systems
Tools Used

- **Locust** – Load Generator
- **MockServer** – Simulate External Systems
- **Wireshark** – Packet Trace
- **Scripts** – Create Tests & Collect Data
- **Python**
Testbed Setup

Robot VM
- Test Manager
  - Load Generator
  - Mock Server
  - Resource Utilization Collector

Dashboard OA&M (VID)
- Policy Framework
- DCAE
  - Correlation Engine (Holmes)
- Service Orchestration Project
- A&AI/ESR

RUN-TIME
- MSB/DMAAP
  - Multi-VIM/Cloud Infrastructure Adaptation Layer
  - SDN-C (L0-L3 Controller)
  - Application Controller (APPC) (L4-L7)
  - Virtual Function Controller (VF-C) (Note: 1)

Common Services
- AAF
- OOF
- Logging
- Others
Register MockServer as ONAP ESR SDN Controllers
Changes to Make on ONAP MSB
Class UserBehavior(TaskSet):
    @task(1)
    def test(self):
        test_create_service_instance()
        test_closed_loop()
        test_scale_out()
        test_scale_in()
        test_delete_service_instance()

    ...
    ...

Class User(HttpLocust):
    task_set = UserBehavior
    min_wait = 1000
    max_wait = 3000
Collected Throughput and Latency Data
Collected Resource Usage Data
Next Step: Automate Platform Non-Functional Tests In CI/CD
Q&A

Call for contributors
Please contact with integration team if you are interested in