ABOT

A Test Orchestration solution

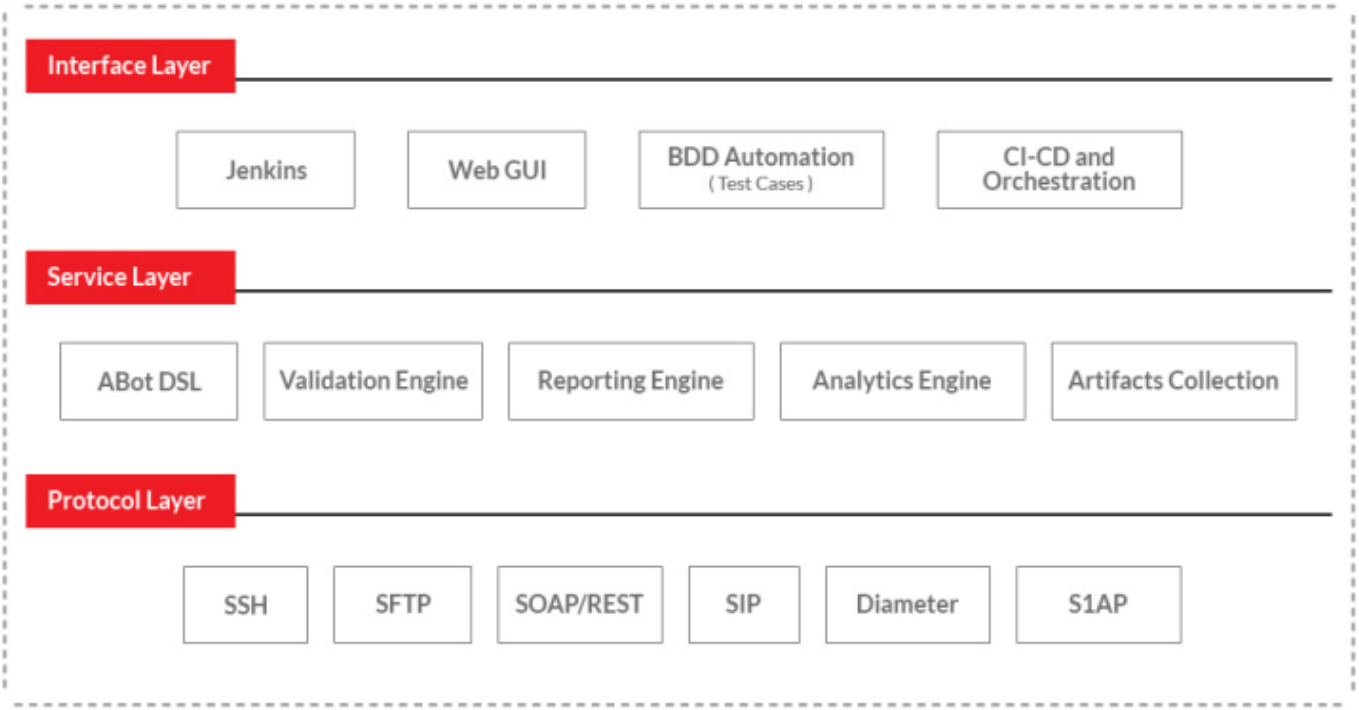
ABot: Test Orchestration Solution for Next Generation Communication Network

SDN and NFV is revolutionizing the industry by driving lower costs and higher service revenue. However, this transition requires different technologies to work together, allowing operational simplicity and enabling broad adoption. VNF Onboarding as well as multi-VNF interoperability is critical for Service Providers to rollout services based on VNFs in an NFV ecosystem.

ABot, the Test Orchestration solution from Rebaca, helps Communication Service Providers, VNF vendors and Platform providers address this pain point. It combines the best practices of Test Automation, CI-CD and virtualized deployment. ABot uses the concept of BDD (Behaviour driven development) to define service-level test scenarios in a high-level language using spec-driven acceptance criteria thereby enabling collaboration with multiple stakeholders.

These test scenarios are scheduled to execute through a CI engine and be ready for deployment based on the execution results.ABot also provides advanced Test Analytics to enable performance visibility across multiple test executions.

ABot Architecture



Features and Specifications

- Onboarding VNFs on multiple cloud platforms using different NFV orchestrators
- Available for deployment in multiple cloud platforms including OpenStack
- Validates Conformance to Technical Specifications for EPC, IMS and VoLTE
- Enables Performance and Load Testing
- Easily extensible protocol adapters for supporting multiple VNFs
- Validation of OpenStack cloud deployments

Use Cases

Test VNFs on cloud environment by invoking actions on ABot charm for different test scenarios. These test results are published in a readable format

- IMS Bundle and Test Suite - ABot is available as a Juju charm bundle along with Clearwater IMS. This bundle includes the following adapters for ABot: SSH and HTTP adapters, SIP adapter(Gm) & Diameter adapter(Cx). IMS bundle enables the deployment of both ABot and Clearwater IMS on multiple cloud environments using a single command and includes automation for the following call flows.
    - IMS Registration
    - IMS Authentication Mechanisms
    - IMS Call Control(Speech as well as video)
    - IMS messaging
    - IMS Subscription/Notification

- EPC Bundle and Test Suites - ABot is available as a Juju charm bundle along with OAI EPC. This bundle includes the following adapters for ABot: SSH and HTTP adapters, S1AP adapter & Diameter adapter(S6a). An automated test suite of EPC call-flows is included along with this bundle. EPC bundle enables the deployment of both ABot and OAI EPC on multiple cloud environments using a single command and includes automation for the following call flows.
    - EMM Common Procedures
    - EMM Specific Procedures
    - EMM Connection Management Procedures
    - NAS Security

- VoLTE Voice Call Setup and Validation - ABot is available as a Juju charm bundle along with both OAI EPC and Clearwater IMS. This bundle includes adapters for communicating with both the EPC and the IMS. An automated test suite of VoLTE call flows is included along with this bundle.

The ABot-VoLTE bundle enables the deployment of both OAI EPC and Clearwater IMS along with ABot on multiple cloud environments using a single command and includes automation for IMS registration as well as end-to-end SIP calls over the LTE infrastructure.

- Openstack Validation - ABot includes test cases for validating both simple and complex scenarios for Openstack deployment.
    a) Simple scenarios such as validating the creation of users, volumes, flavors, networks and instances.
    b) Complex scenarios like the following.
        - Validation of firewall rules for created instances
        - Validation of system KPIs for parallel volume snapshot creation and deletion
        - Validation of system KPIs for parallel instance creation and deletion
        - Validation of system KPIs for parallel tenant and user creation along with various Openstack components listings.
        - Validation of Openstack deployment for noisy neighbor conditions.

Report UI and Advanced Analytics

ABot Reporting Interface

ABot features an intuitive reporting interface that enables users to view test execution summary as well as detailed results. In addition, it also enables users to view feature files, artifacts and configuration.
The ABot UI comprises of the following components.

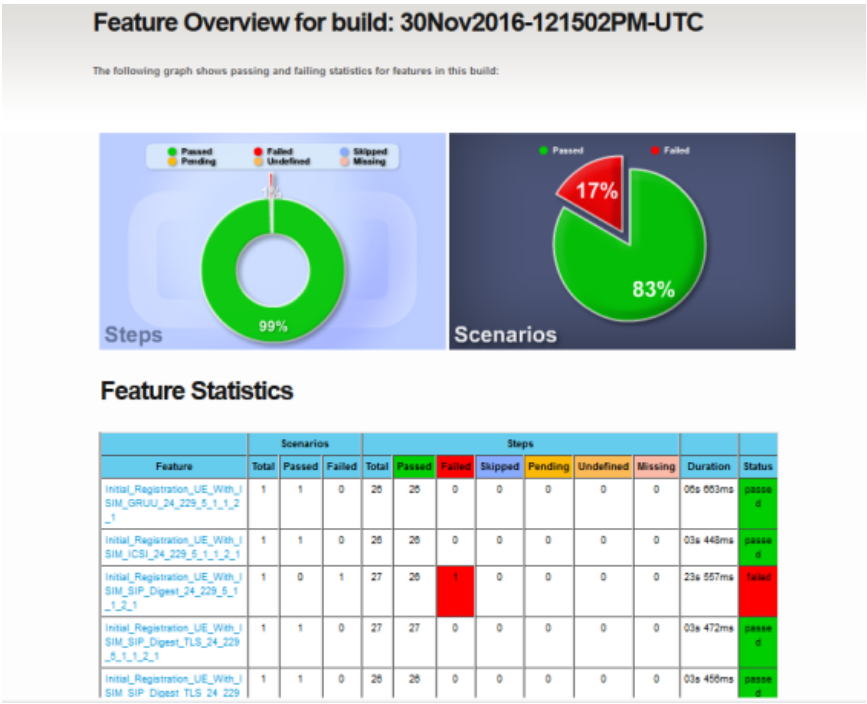
- Dashboard – Provides the summary report of the last test suite execution. Detailed report for each test case is available by drilling down from the summary view. This report provides the Pass/Fail/Skipped indicator for each step in a feature file; along with the time taken for that step.

- Artifacts – Provides a listing of past executions ordered by timestamp. It is possible to view older reports, view and download Test execution log files as well as pcap captures through this interface

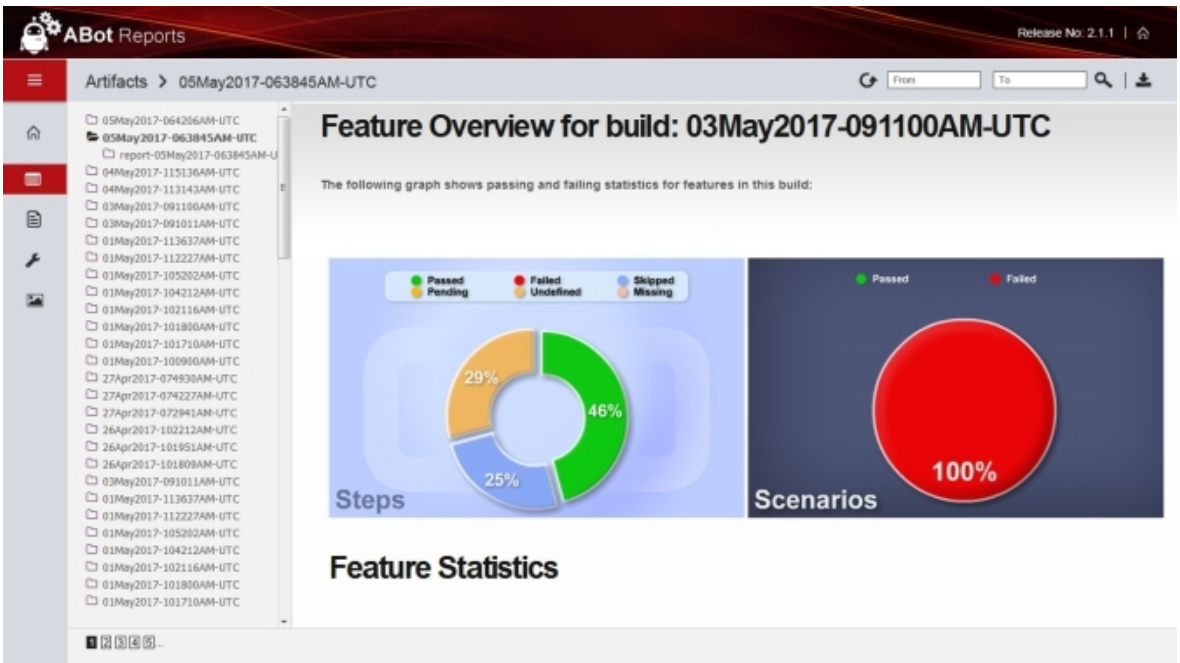
- Feature Files – Provides a listing of all Feature Files(Test Cases) as well as a mechanism of executing them and viewing the results on the console. It may be noted that multiple feature files may be executed simultaneously by invoking tags that are shared across test cases.

- Configuration – Provides a list of the configuration files in the system and a mechanism for viewing them graphically.

ABot Reporting Interface
(Multiple Feature Files)



ABot Reporting Interface(Artifacts)



Advanced Reporting based on Predictive Test analytics for functional and performance testing

ABot features an advanced analytics engine that provides valuable insights over and above the regular validation reports that get generated after every test suite execution.

The primary goal of the analytics engine is to depict trends in the maturity of the software over a series of executions. Additionally, it can also be used for narrowing down failures over a period of time and determining the root cause of the same.

Each test result is ingested by ElasticSearch and a variety of analytics are available out-of-the-box in the form of Kibana visualizations.

Some of the available analytics are as follows.

- Observed trends in maturity of a Release over a period of time
- Predicted maturity of the Release in the subsequent execution cycles.
- Observed trends in maturity of individual features/functionalities of a Release over a period of time
- Predicted maturity of specific features/functionalities in subsequent execution cycles.
- Top 5 Test Cases based on failure count over a period of time
- Drill-down report on the outcome of each step in the failed Test Cases over a period of time.

ABot Analytics(last n days)