Network Test Automation

Release 24.12

Nokia Network Test Automation (NTA) is a framework that helps carriers, enterprises and utilities drastically shorten validation cycles and accelerate and secure the introduction of new features and services into their networks. With NTA, test engineers can perform recurrent verification of the Nokia IP, optical and fixed network portfolio, reducing inherent risks by minimizing human errors at the touch of a button. Supported by standardized domain keywords and Robot Framework test cases, NTA provides all the capabilities required to automatically validate any Device Under Test (DUT) or System Under Test (SUT) in a physical, virtual or hybrid environment.

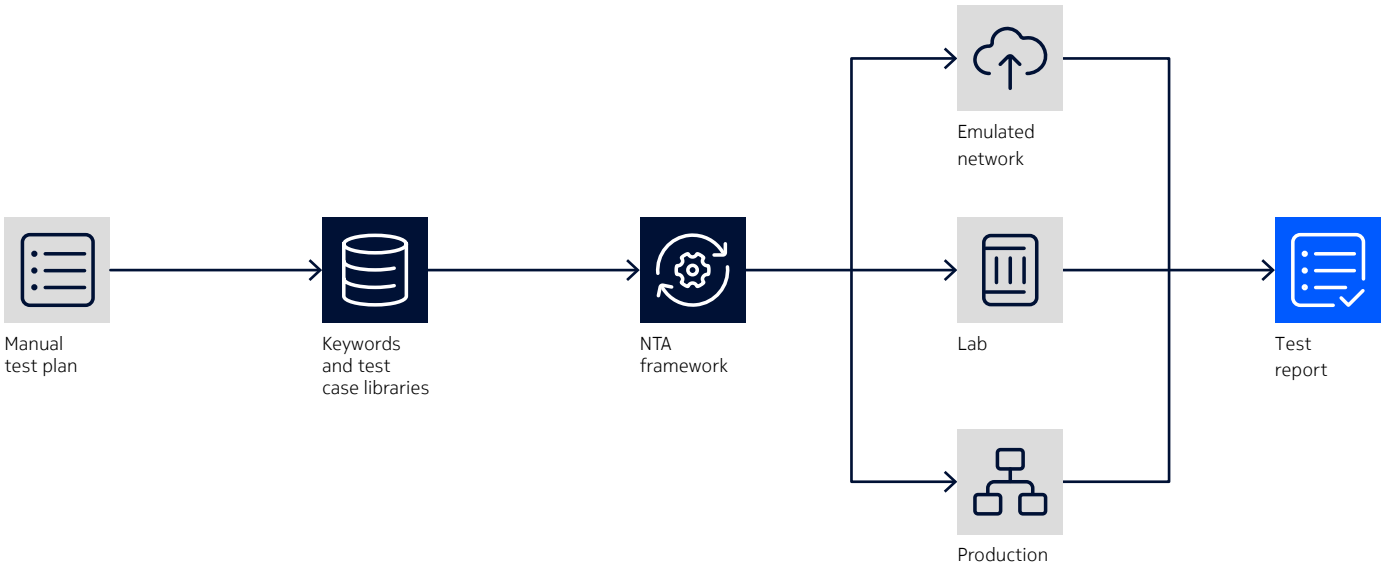
Features

- Extensive libraries of standardized test cases and keywords for Nokia networking equipment and associated management systems
- Push/pull mechanism to automatically retrieve software packages from the Nokia artifact repository
- NTA Runner capability for enabling concurrent execution and local report generation based on customized templates
- Regular and automated comparison of actual test results with predicted outcomes
- Documented REST API for northbound integration with external systems, pipelines and other apps

Benefits

- Higher efficiency in testing and validating hardware and software releases, along with faster time to value
- Regular library updates increase the test coverage and the capability to verify new products, services and features at a higher cadence
- Right first-time execution and fewer human errors
- Better network and operational quality
- Abstraction of the complexities of the underlying network infrastructure

Figure 1. Network test execution process



Solution components

Supported network platforms

- IP networks: SR OS, SR Linux, NSP
- Optical networks: WS-NOC, 1830 PSS
- Fixed networks: Altiplano, ISAM, Lightspan, SDAN

Keyword libraries

- IP networks: SR OS, SR Linux, NSP
- Optical networks: WS-NOC, ESM, CLI
- Fixed networks: Altiplano, ISAM, Lightspan, SDAN

Supported test cases

- IP networks: Baseline (system, operations, interfaces), routing protocol (BGP, ISIS, OSPF, LDP/RSVP, multicast, segment routing), security, services, QoS, performance, BNG, SeGW, NAT
- Optical networks: GUI, administration, EQM, WebFM, node management, physical connections, infrastructure connections, service connections, user management, ESM
- Fixed networks: Altiplano (profiles, inventory, alarming, network views, performance monitoring, upgrades, backup/restore, health checks, vCLI, IBN actions, Openshift cluster), ISAM and Lightspan (protocols, security, VLAN, traffic, ONT interoperability), SDAN solution (5G transport slicing, SDAN POD, FastMile controller)

Test automation framework

- NTA Runner for test case execution and local test report generation
- Standardized Robot Framework libraries of test cases for Nokia IP, optical and fixed networks
- Python-based keyword libraries for Nokia IP, optical and fixed networks
- NTA portal web application (future) for collaborative Test Case Management System (TCMS), test case orchestration and test artifact delivery service

Supported traffic generator

- Keysight IxNetwork (REST API)
- Spirent TestCenter (REST API, TCL)
- Raspberry Pi (REST API) for fixed networks
- iPerf3 (SSH)

NTA Runner

- Automated TCMS test package download and test results upload
- Test package manifest (YAML) to configure runtime execution and variable mapping using JSONPath
- Sequential and concurrent test case execution
- Test result separation per test session and test case
- Customizable report template using Jinja2
- Northbound REST API for NTA Runner integration with pipeline or other applications
- Web user interface (future)

NTA features and benefits

- Pre/post comparison
- Parsing for classic CLI interface outputs
- Reusable and portable test cases
- System rollback feature for SR OS and SR Linux
- PCAP analysis

IP network interfaces

- SR OS: Classic CLI, MD-CLI, NETCONF, SNMP, gRPC
- SR Linux: SRLinux CLI, gRPC
- NSP: REST API, Selenium WebDriver, image recognition for GUI testing

Optical network interfaces

- WS-NOC: Selenium WebDriver, SSH
- 1830 PSS: CLI, SSH

Fixed network interfaces

- ISAM: CLI
- Lightspan: NETCONF, CLI
- Altiplano: NETCONF, RESTCONF, WebUI, SSH

Delivery

- Docker images
- Helm charts for Kubernetes
- Python wheels

Licensing model

- Right-to-use (RTU) based on yearly subscription
- Professional services for customized development of new keywords and test cases

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