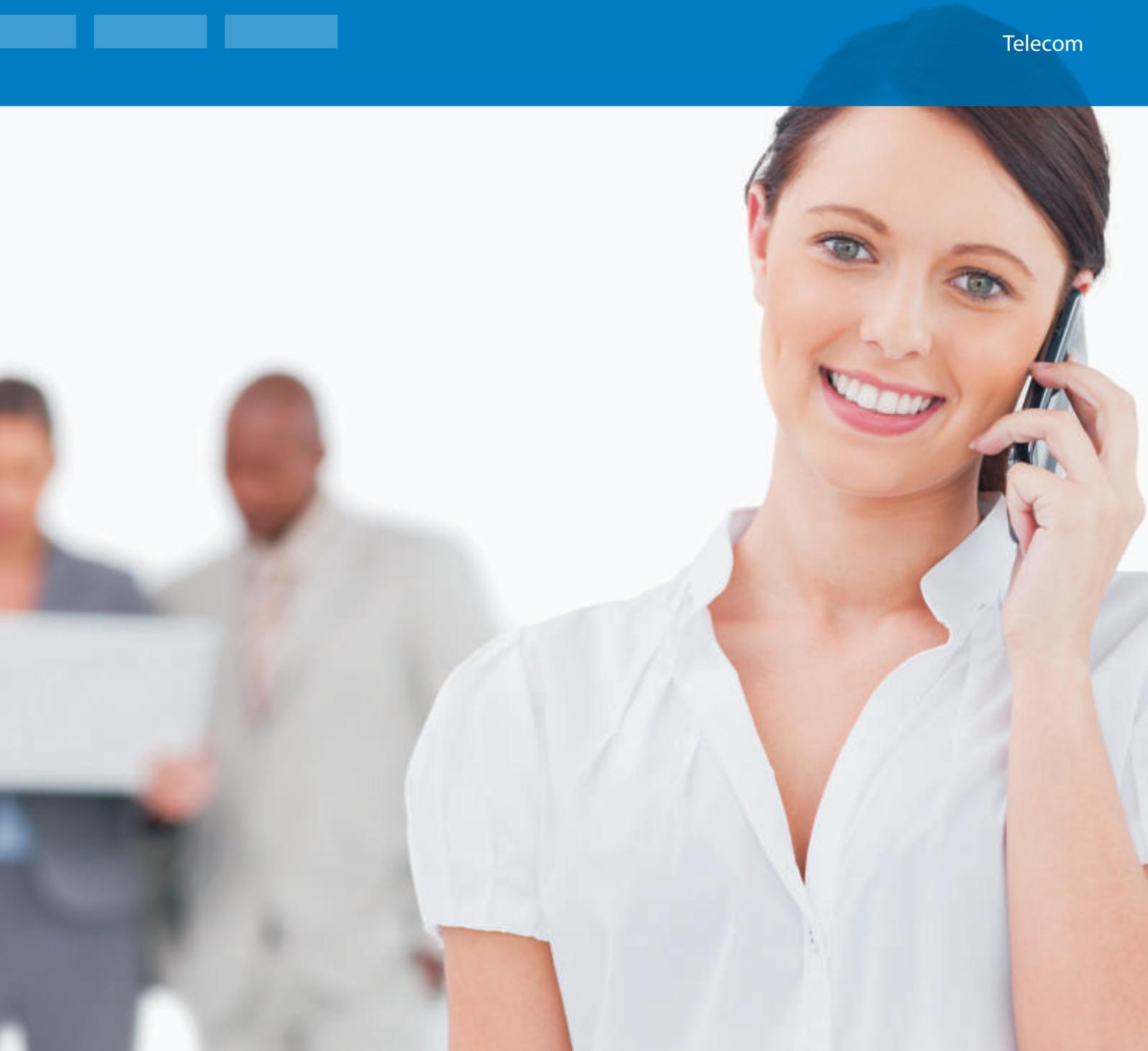


TCS Software Defined Networking Test Harness



Telecom



Software-defined networking (SDN) is gaining acceptance as a transformative network concept despite the challenges in implementation due to issues related to standardization, interoperability, and accelerated testing capability. Concurrently, there is also an astronomical increase in use cases for virtualization and software defined network techniques among telecom equipment vendors and service providers, especially in the telco cloud eco system. An SDN test framework that enables accelerated testing for protocol conformance to various standards and a shorter go-to-market time is today an industry imperative.

The SDN Test Harness is a Tata Consultancy Services (TCS) offering that provides a web-based, multi-user, multi-DUT (device under test) integrated framework that enables single-seat protocol specifications, infrastructure automation, and end-to-end use case verification. Our SDN Test Harness promises accelerated regression and new protocol specification conformance that enhance the network's capabilities to meet the overarching demands for greater network scalability, speed, and resilience.

Overview

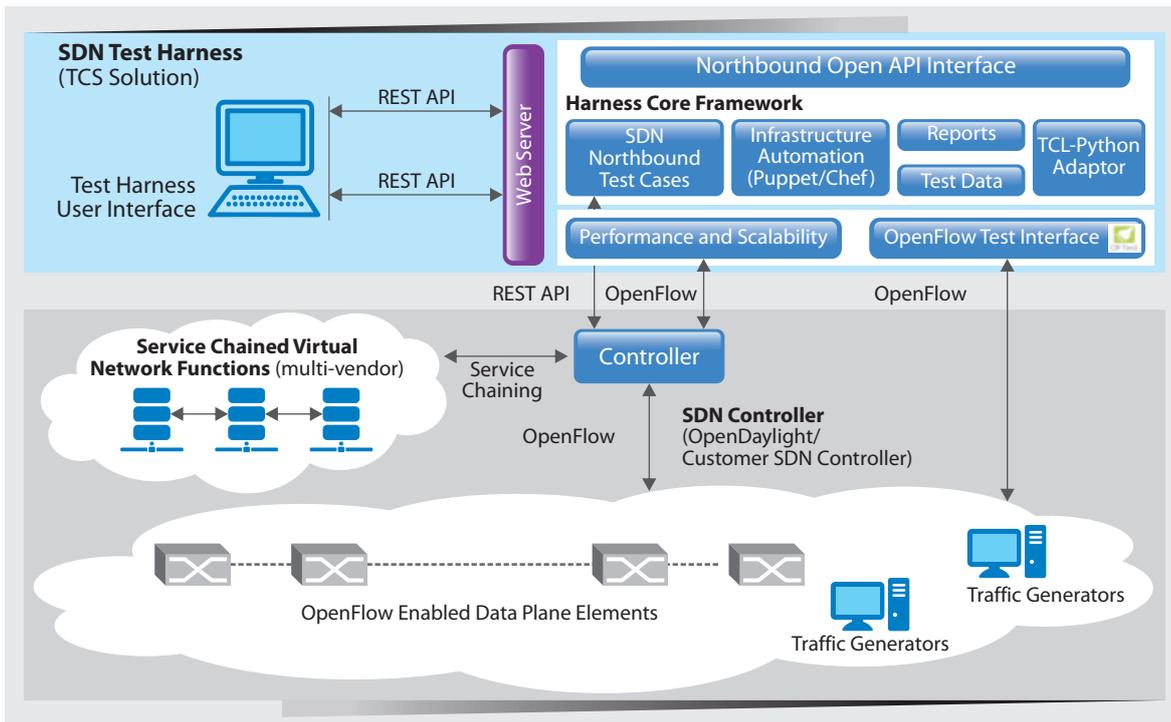
The telecom cloud eco-system faces significant churn due to the heterogeneous nature of SDN controllers and the emergence of new protocols and specifications. These impact the capabilities of telco equipment vendors and service providers to ensure protocol conformance to new specifications, regression testing, support for infrastructure use cases, and verification of the service provider use cases for the SDN eco-system. Enhanced OpenFlow specifications, increased infrastructure automation, and bulk and network configuration of SDN equipment, along with other evolving SDN technologies and the introduction of new control data plane interface standards, have led to the emergence of further demands for integration frameworks.

In this eco-system, what is required is a protocol conformance framework for new specifications and for multi-vendor SDN switches that also support regression tests. Organizations also require independent or co-resident automation scripts that support configuration of networks and capabilities to verify use cases for single or multiple deployments across the SDN eco-system. TCS SDN Test Harness addresses these needs by extending a single seat framework that enables protocol conformance, testing of infrastructure automation use cases, and end-to-end user-story testing and execution as applicable to an SDN network.

Our Solution

TCS SDN Test Harness is a web-based multi-user, multi-DUT integrated framework enabling single-seat protocol specifications (such as OpenFlow, OpFlex, onePK), infrastructure automation (through the use of applications such as Puppet and Chef, and programming languages such as Python), and use case verification (SDN apps on SDN Controllers, SDN Controller test cases, and so on). The extendable framework allows integration with open-source or vendor-specific frameworks, and also enables automation and configuration.

Our scalable solution conforms to OpenFlow, and includes test scenarios inclusive of actions, containers, and matches with actions (VLAN, L3/L4 headers); counter verification; packet in and packet out; insertion or modification of data flows; and so on. It is integrated to traffic emulation components and can also be integrated to third-party traffic generators. It supports end-to-end use case verification through integration with open-source or vendor-specific SDN Controllers via north-bound APIs. Test suite progress tracking, failure or error scenarios, and report generation support the delivery of data validation and reporting requirements.



Architecture of TCS SDN Test Harness

Benefits

This solution offers telecom equipment vendors and telecom service providers several benefits that include:

Accelerated protocol conformance and reduced testing time: The framework supports accelerated regression and conformance with new protocols, and leverages a single-pane integrated SDN harness, to reduce the testing time from an average of three weeks to a mere two days (once the specifications are scripted).

Infrastructure automation testing: The framework enables testing of infrastructure automation use cases, as well as service provider use cases.

End-to-end user story testing and execution: TCS' solution provides a platform to test end-to-end user stories applicable to SDN networks, including multi-vendor networks. The test framework can be leveraged to demonstrate user stories to service providers in an SDN enabled network.

Reduced costs and improved business performance: Faster and more effective testing through the SDN test harness will also contribute to reduced testing costs and higher product quality and customer satisfaction.

The TCS Advantage

The unique advantages of TCS SDN Test Harness include:

A single integrated test framework: The SDN test framework is a uniquely positioned web-based single seat, multi-user, and multi-DUT framework for SDN protocol conformance.

Traffic generator: An integrated traffic generator that emulates third-party hardware helps in accurate protocol verification with traffic.

Easy integration: An open interface supports easy integration to open-source or vendor-specific infrastructure automation frameworks.

Scalability: The SDN Test Harness is scalable to include end-to-end use-story verification for SDN networks (SDN apps and use cases applicable on SDN Controllers).

Product engineering experience: Our experience in SDN research and development enables accelerated turnaround and feature enhancements in meeting our clients' SDN requirements. This experience is augmented by our Center of Excellence (that creates solutions around SDN and Virtualization) and contributions to open source telco cloud platforms for SDN Controllers (OpenDaylight) and Virtualization (OpenStack).

About TCS' Telecom Business Unit

For over three decades, TCS has worked with companies in the Communications industry, helping them develop world class solutions and systems, simplify operations, augment network services, diversify into new markets, and stay ahead of the competition.

Our solutions address the entire landscape of telecom businesses, ranging from greenfield start-ups to large cable and satellite companies and equipment vendors. Our partnership model leverages ready-to-deploy platform solutions, proprietary frameworks, and solution accelerators to enable our clients to launch new products and services quickly.

TCS' investments in next generation platforms, mobility solutions, capabilities, and lab infrastructure are aligned to address our clients' key business imperatives of operational excellence, customer experience, and revenue enhancement. We have helped enterprises unlock business value in the areas of Digital Channel and Commerce, Customer Insights, Mobility Solutions, Hosted OSS/BSS (HOBS), IOT & M2M Platforms, Connected Device Management, B2B Platform Ecosystem and Services, and Network Abstraction layers.

Contact

To know more about the TCS' Telecom Business Unit,
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About Tata Consultancy Services Ltd (TCS)

Tata Consultancy Services is an IT services, consulting and business solutions organization that delivers real results to global business, ensuring a level of certainty no other firm can match. TCS offers a consulting-led, integrated portfolio of IT and IT-enabled infrastructure, engineering and assurance services. This is delivered through its unique Global Network Delivery Model™, recognized as the benchmark of excellence in software development. A part of the Tata Group, India's largest industrial conglomerate, TCS has a global footprint and is listed on the National Stock Exchange and Bombay Stock Exchange in India.

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