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Test case Generation for Conformance Testing of Optical Network Switch Using Robot Framework

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Abstract: Rapidly increasing internet users so, the service provider need to upgrade the new generation devices. To fulfill all these issues in the proposed system. Proposed system is a software application, consists set of software products developed for the automation of Switch operations and, it runs on the Linux platform. For testing we are used various software packages to integrate in to the framework. The tests on the optical network switch are predefined test case sequences through this achieved huge amount of bug free files. The proposed system is used to analyze the test case history of the network element before committing new code. It provides user friendly environment and the test data has set of TL1 commands for validating the next generation products. The proposed system is used for to speed up the testing process with effectively and cost also less. Observed gives more efficient performance than physical testing.

I. INTRODUCTION

With the advent of new generation of smart devices and more people connecting to Internet, there is an increase of bandwidth requirement exponentially. To address these bandwidth challenges telecommunication equipment provider had to come up with new products with in short duration. There is need to conformance test new products before releasing product through this to fulfill this need in the network element operations.

For developing proposed system we are using conformance testing, it is used for testing based SRS requirements are system over all consistency, completeness and correctness [6]. It gives the better performance than physical testing. Enables Test driven development (TDD), where platform code will get validated before getting committed.

Proposed system is an arrangement of software products which is created for integration for testing operations. It is composed into different ongoing, offline, support and extraordinary special purpose programming packages. The real functionalities are test continuously for programmed sequencing of test strategies, running in the servers which is additionally controls the different checkers.

This proposed systemsoftware integrates all the data that are available in multiple files (may be in python scripts or C language or others) and generates based on the on time line of the event. It helps to optical switch test databased on the time series and detailed set of commands issued during testing which are stored in the database. It provides user friendly environment, based on the users requirement directly execute the test data sequences without knowing anything. The test data has set of TL1 commands for validating the next generation products.

The Organization of this paper is done in to 7 sections. In the first chapter, the document contains Introduction of the project. In the second Chapter, the document reveals the Literature Survey and back ground work. In the third chapter the document contains Implementation details. In the fourth chapter the document contains Results and discussion. In the fifth chapter the document contains Conclusion.

II. RELATED WORK

In all optical network automated connection provisioning and restorat on framework [7]: The inactive of APRS (Automated Connection Provisioning and Restoration Subsystem) have tired a tremendous contract of consideration as of valid various network topologies, it organizes network services, VPN, VLAN, QoS and for providing PC, SPC, SC through automated connection provisioning [7]. The proposed approach utilizes restoration mechanism and low expensive.

Extension based on robot framework and application on Linux server[8]: Robot Framework is a generic test automation framework based on keyword-driven and has been widely used in the automated testing of server [8]. In this paper, Robot Framework is extended by test libraries to include some features in order to meet the demands of server testing, and the extended framework is used to execute the automated installation testing of server drives and firmware [8]. Finally, analysis the testing result and get the conclusion that the extended framework based on Robot framework can be easily applied to the automated testing of Linux server [8].

A. Automation frame work (Robot framework)

The main objective of the checker is integrates various test data in the single system. It contains sub parts, related to provisioning and maintains activity in the node. The main job of this is control the all the test activity.

B. Test data Generation

Test data Generation meansgenerates all the data that are available in multiple files (may be in python scripts or C language or others).

C. Testing architecture

The proposed system is follows the 3-tier client server architecture. Here client is end user, administrator means software developer and server means Database system. On the other hand, user (client) module handles general consumer which is used for the display of all rapid file data based on altered time points. The database module acts as mediator between client and server modules, for storing the tested data.

III. IMPLEMENTATION

Optical Network element (optical switch) is expensive product and unique. For network elements spends enormous amount of resources for activity of testing in both software and hardware components. Physical testing is a time taken process, it is not suitable for agile model. This assembly, integration and testing is time consuming activity, there is a need to quickly, efficiently and accurately test the node elements, for this purpose the only way is automation activities in the hardware and software components for performing efficient and cost effective operations[3].

Experimental setup: the proposed software system has been used Robot framework, which is compatible of UNIX/LINUX platform. Test case files are integrated with robot framework, in which files are stored in the database.

Through this system we tested different types of features for switch, features like: provisioning with different payloads.

A. Proposed work

The figure[1] shows the proposed system overview, it contains various types of files and CLI commands, which involves in test case sequences.it is used for test all types of data, which are present in the system. Here test case data contains CLI commands, Python scripts, GUI commands and Algorithms.

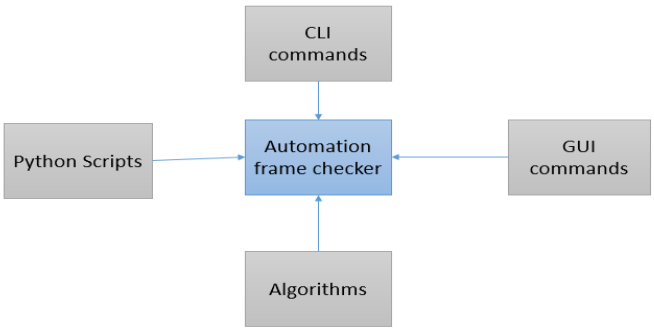

Figure [1]: shows the proposed system overview

B. Test case Generation

Test case data, which consists of CLI commands of different test suites and also it has different types of files, .these files integrated with this system. It integrated files are in different formats.

The following figure 2 shows the flow chart diagram for this system. The proposed project system is a GUI based application. For login the users have to correct credentials, after that upload the files into the database, these consists of CLI commands of different test suites and also it has different types of files, these files integrated with this system. Retrieve the test suites, which are presented in the system. Based on the user necessity, user may want to execute one test suite at a time or group of test suites at a time.

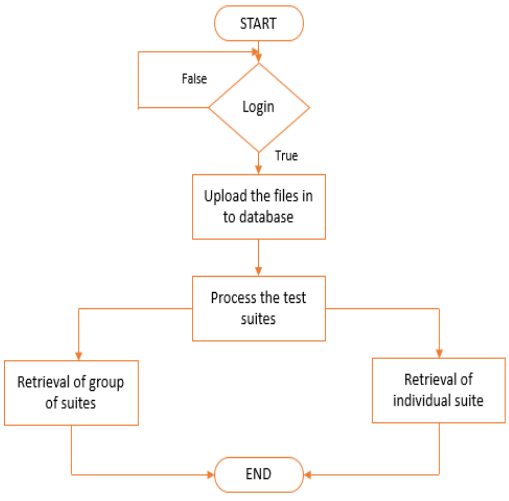

Figure 2: shows the flow chart diagram

IV. RESULTS AND DISCUSSION

The proposed system is used to analyze the test case history of the network element before committing new code. It can accepts the data in the form of various types of files. It provides user friendly environment. The test data has set of TL1 commands for validating the next generation products. This has improved the test case files processing, retrieval which reduces the time and cost and human errors [5].

A. Test cases considered:

Case 1:

Test Case ID	TC01
Aim	Verifying Test cases
Description	Automatically Verifying Test cases with 10G payload with recent Install package at certain time point in the node
Mode of Operation	Verifying 10G payload
Input	Node Availability
Expected Output	Successfully executed 10G payload test case in the node
Remarks	Test Successful

Case2:

Test Case ID	TC02
Aim	Verifying Test cases
Description	Automatically Verifying Test cases with 100G payload with recent Install package at certain time point in the node
Mode of Operation	Verifying 100G payload
Input	Node Availability
Expected Output	Successfully executed 100G payload test case in the node
Remarks	Test Successful

B. **Comparison:** through proposed system we can achieve the upgraded software application. The manual testing or physical testing is the time taken process, which reduced down at the ratio 5:1.

V. CONCLUSION AND FUTUREWORK

The proposed system software application, which consists set of software products developed for the automation of network element operations and it generates error free files. It runs on the Linux platform. For testing we are used various software packages to integrate in to the framework. The tests on the network element are predefined test case sequences through this achieved huge amount of bug free files. Through this we can integrate various types of files in to the same test sequence.The proposed system is used for to speed up the testing process with effectively and cost also less. We observed the gives more efficient performance than physical testing.

In future we can increase the scope and along time triggering over a night or weekends or whichever required.

ACRONYMS

CLI Command Line Interface

GUI Graphical User Interface

TL1 Transaction Layer1

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