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AUTOMATION OF QUALITY ASSURANCE OF PABX MANAGEMENT

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Abstract- The case study involves the understanding of various configurations of PABX that enables its working. The configuration management is handled through a Webbased management interface. The software that controls the PABX is provided with updates and upgrades. The consistency testing of the PABX software for every release is hence necessary to make sure that it works without any deviations. A manual testing strategy of the same is designed and it is converted into automation. This ensures the consistency of testing, reduction in human error and effort,
which as a whole keeps the quality in check.
Keywords – PABX (Private Automatic Branch Exchange)

1. INTRODUCTION

A PBX is a system that allows an organization to manage incoming and outgoing phone calls and also allows communication internally within an organization. With analog/legacy PBX becoming irrelevant, IP-PBX has taken grip attributed to advantages like single network, very high cost saving, easier management, soft switches, state-of-the art security, etc of the latter. Earlier there used to be two different networks for voice and data, whereas in IP-PBX only one network is required i.e., only one network is required if voice is packetized (voice over IP) and sent over the data network. IP-PBX is combination of switch/router and a PBX that handles VOIP. In an IP PBX, computer can be on a shared LAN that is connected to the IP PBX. Telephones, on the other hand, should be directly connected to the IP PBX. This avoids Quality of Service (QoS) issues that arise if both computers and telephones are on a shared LAN.

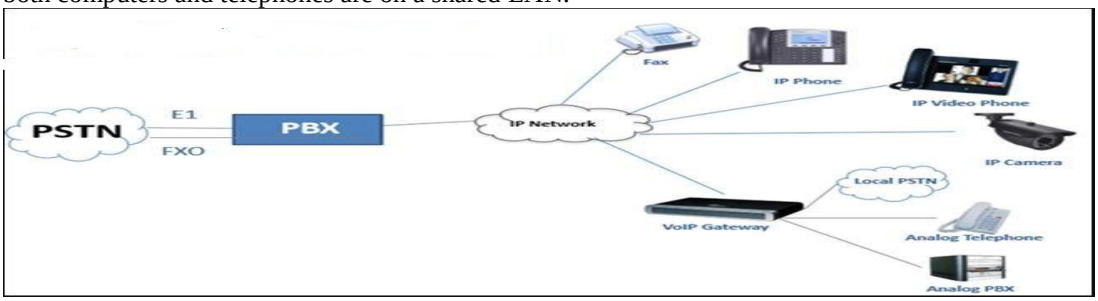

Figure1. IP-PBX SETUP.

2. PROPOSED ALGORITHM

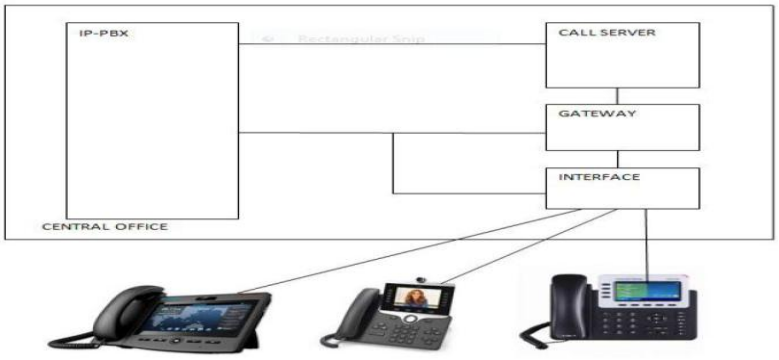

Figure2. IP-PBX ARCHITECTURE

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2.1 Call Server

a. Manages the setup connection of telephone calls.
b. It will receive call setup request messages, determine the status of destination devices, check the authorization of users to originate and/or receive calls and create and send the necessary messages to process call request. It has all the features/functions, information about each user in PBX, and different types of services they are entitled to.
c. In context with this project, the OS is Linux, for functions call server performs needs software (which is package of all functions and features).

2.2 Gateway Driver

a. Is to distribute the control signals from call servers to other equipments like supplement boards, extension racks, and phones.
b. To provide media channels for the system (voice packets, tones, DSP channels etc).

Managing the PBX has been made easy with the advent of interactive web based management (application). The administrator PC is connected to the call server of IP-PBX. The interactive web based application is based on the call server of the concerned PBX. The web application is updated with each update of call server (software update). The connection to the application can be made through IP address of remotely connected PBX.

3. BACKGROUND

This project is based on new web-based application based on IP-PBX. This web based application allows the administrator to add/delete users, give some extra privilege to some, create shelf, decide what type of encryption to be given to particular user, create group, authorize some users for entitlement for applications like video calls, etc.

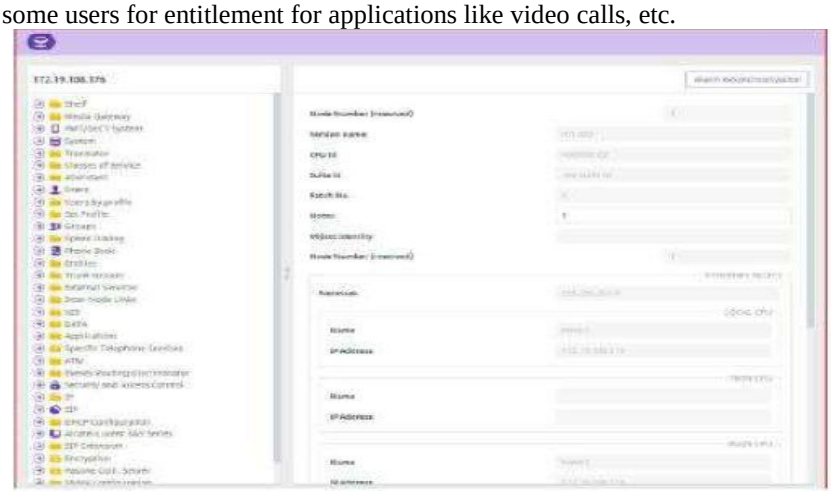

Figure3. Web Based Management

These features are all based on the call-server of IPPBX, which contains package of all function and features. The operating system of call server is Linux. Consider the current version of call server ix X1 which consists of 25 features, there is an need to test all these features before giving it to customer, while testing there may be some bug with some features. Developer will fix these bugs and release to customerX1.a in stipulated time.

Once it is moved to customer there may be some real time issues and raised as bugs, which needs to be solved and along with that new features may be added for next release X2.In every released regression test should be performed i.e, due to added new features of X2 there should not be any issue with basic functionality of X1.a. For every release, regression should be tested manually for about 200+ test cases repeatedly.

4. TESTING STRATEGY

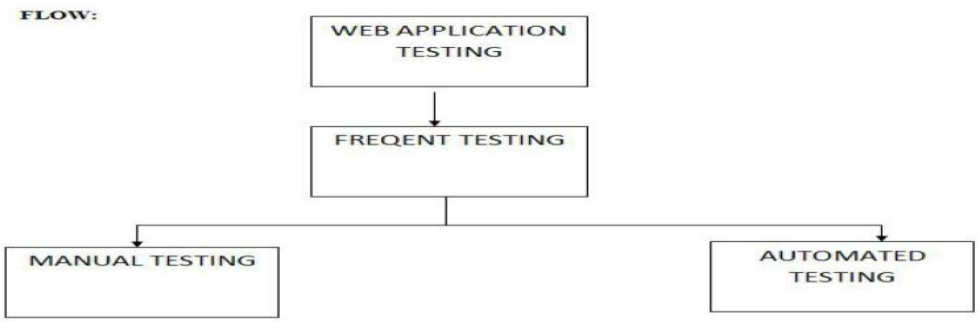

Figure4.Testing Strategy Flow.

a. To avoid regression we have to go for frequent testing of web based application (IP-PBX). After the release of latest version of the customer may face real time issues and report as bug.
b. Developer has to find the solution of reported bug and release the new updated version.
c. After the new version is released one has to test repeatedly the existing features and functions to ensure that the new added features do not affect the existing one.
d. Performing these tests manually repeatedly is tedious and error prone task, and may even take weeks to complete the tests.
e. However if these tests are automated by some means then it will not only reduce time but will also completely eliminate the human error.
f. All tests are first performed manually and then automation code is written in JavaScript and selenium libraries are added to it.
g. Selenium is used to automate the browsers and therefore it is for automating web applications for testing purposes.

5. RESULTS

The automation code for various functions/features of configuration management (web based interface) was written and tested successfully in real time scenario, under various conditions. All together 174 test cases was written and tested successfully.

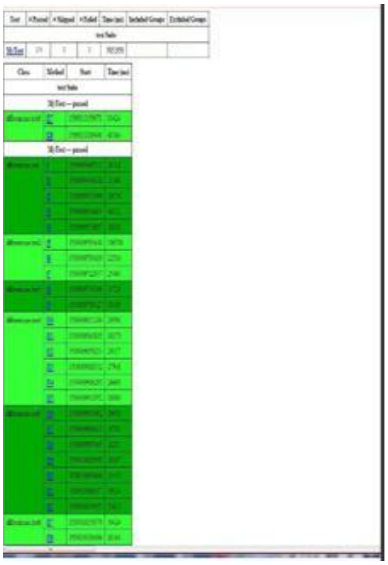

Figure5 .Emailable report

6. CONCLUSION

The automation strategy not only saves time, but also reduces the need for manpower and eliminates
the human error, which is critical for any IT industry. For every IT industry regression testing forms a very crucial part of their work. In future more tests may be accomplished through automation, may be using some different tools. With recent trends in 'virtualization' and automation the industry is experiencing double digit growth.

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