NFTaaS on Cloud

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Abstract- Software testing assumes a very significant role in the growth of an enterprise. It becomes a challenging activity for enterprises due to increasing technological complexities, software sourcing challenges, rising costs and security issues among others. Cloud computing has opened up new opportunities for testing departments. Testing has traditionally required expensive dedicated infrastructure and resources that were only used sporadically. The growing complexity of business applications also made it harder to build and maintain in-house testing facilities that mimic real-time environments. Compared to maintaining an in-house test environment, cloud-based testing offers lower costs, more flexibility, enhanced collaboration and several other benefits. The objective of this project is to provide a cloud based test solution for delivering automated non- functional testing services for business applications. A self- service portal will be created for executing non- functional testing like load testing, performance testing and scalability testing over a software cloud

Keywords – Non-Functional testing

I. INTRODUCTION

The paper deals with the testing of a cloud application deployed over cloud and it will deals the non functional testing like load,performance and scalability of the application during the peak load

II. WHAT IS TAAS?

Taas is nothing but testing as a service in which there are three forms of taas available in the market.
i)Taas in cloud- It includes testing inside the cloud ie.Testing the infrastructure of cloud
ii) Taas on cloud- Establishing the testing services on cloud
iii)Taas over cloud- Testing the application which are deployed on the cloud ex.Saas application testing

III.SCOPE OF TESTING

Scope includes implementing the type – Taas over cloud ie testing the application which is saas based that are deployed on the cloud.The application is saas based,ie it will have the multitenant based approach and during the peak time how the application is withstanding its load and the performance can be monitored using the NFTaaS Engine using the open source technology.

It can be used to determine the upper threshold of the virtual machine that contains the application.The user capacity can bedetermined and the best performance of the application can be achieved by creating the virtual machines on demand during the peak load.

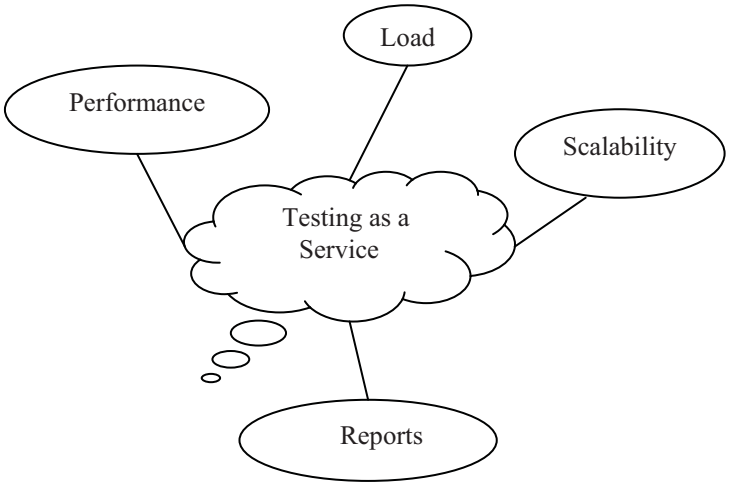

Figure 1. Scope of Testing

IV. CLASSIFICATION ON TAAS SERVICE

Basically the Taas service is classified into into three categories .

Performance ,Scalability and Load Testing:This includes the Evaluation of the application.Once the application is evaluated,test case will be simulated in manual or automated way.Once the testing is done the reports will be consolidated and generated by the engine.

The scalability test will display about the capacity of the application by finding its breaking point and again the load testing will check for the elasticity of the infrastructure where the application deployed

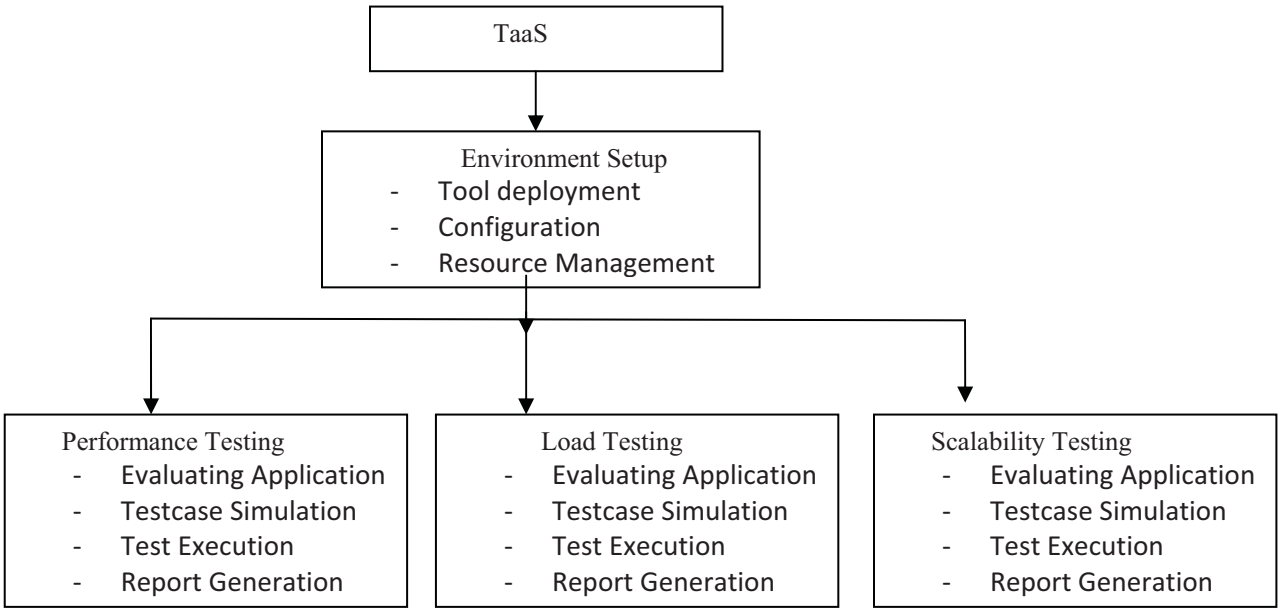

Figure 2. Classification of Taas

V.TAAS WORK FLOW

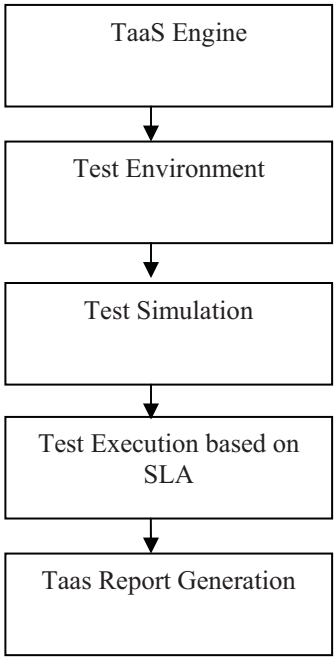

Figure 3. Taas Work Flow

Work flow specifies the step by step execution of the test engine.Once the test engine got configured,test environment will be set.Test can be simulated by the input need to the test environment and the test will be executed by the concerned person by referring the SLA.Once the test is done,reports will be sent to the engine and in turn it will display the reports in the required format requested by the user.

VI.ROLES AND RESPONSIBILITIES OF TAAS

There are four major roles are refered in Taas service.They are

Taas Provider- Who establishes and maintains the Taas service for use

Taas Engineer- Who prepares and executes the testcase and scenarios

Taas manager – Who validates the test execution according to the SLA between the service provider and the application provider

Taas user- Who interacts and uses the Taas service

VII. TEST SIMULATION

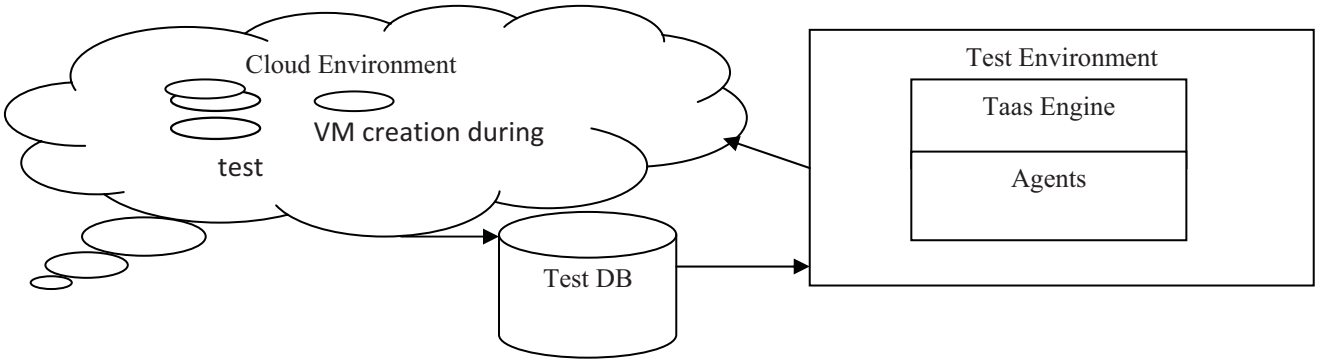

Figure 4. Test Simulation

In the simulation environment,Taas engine will be deployed with the agents that are required to execute the test.Test databse will track and monitor all the transactions.According to the type of testing,Engine will execute the tests and the reports will be generated accordingly.

TABLE I. VENDOR PRESPECTIVE FOR TAAS SERVICE

Service Type	**Service provider view on service**
Objective	Assuring the quality of service against the system function requirements and SLA
Test Focus	Test attributes,scalability and reliability of reports
Test Execution	Private cloud based environment which can expand the environment virtually based on demand
Test Design	Based on the requirement
Test tool	Integrated opensource tool techniques
Testcase generation	Automation/Manual testcase preparation based on the selection of test tool
Test Environment	Standard test environment based on Test engine
Test Execution Technique	White and black box techniques are used
Testing cost	H/w,Tools are opensource

The table gives the idea about the service expected for the Taas service and the perspective of the service provider about the service offered by the provider to the user.
The service type may change according to the service level agreements between the user and the provider.

VIII. TAAS ARCHITECTURE

It has Three important layers.

- The first layer is the test suite.It consists of the NFTaaS engine.Select the type of test to perform the testing and it will interact with the second layer
- The second layer is the Test management layer.By selecting the test tool,the test case can be generated and the test will be performed by injecting the load to the application which is deployed in the Virtual machine in the third layer.

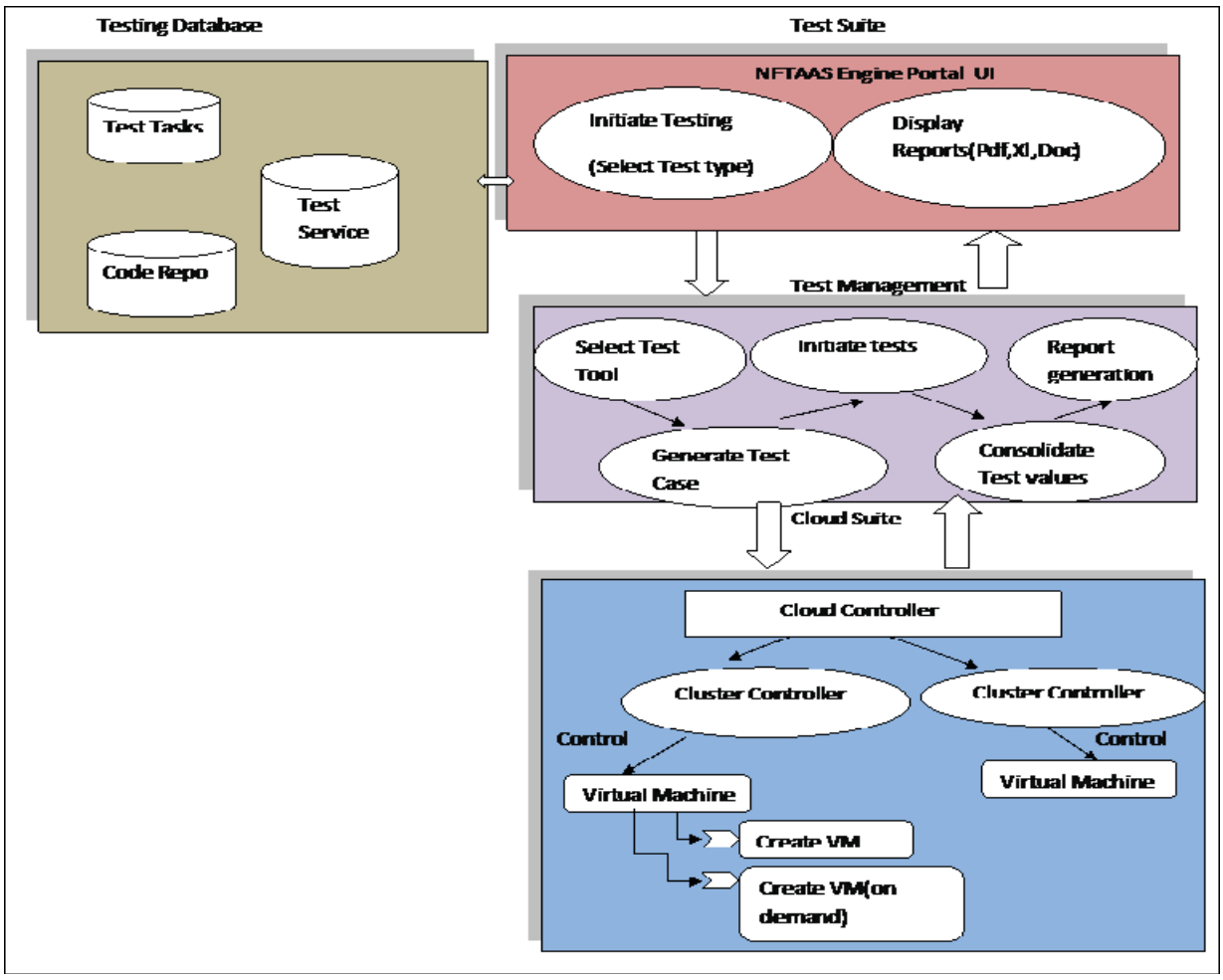

Figure 5. Taas Architecture

- The third layer is the cloud suite which can handle the control of the cluster controller and monitors the virtual machine.
- Parallel to these layers lies the testing database.It will have the details of all the transactions that are taking place during the test run.

The code repository will be maintained separately, for each updates a new build can be deployed as and when needed.

IX.CONCLUSION

This paper is just an initiative for the test services as a one stop solution for multiple non-functional test services. In future this can be extended to perform the testing for SME's to perform their testing cost effectively.

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