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Testing of Cloud Applications in the Cross-Cloud Environment

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***Abstract*—Cloud computing is the new paradigm to deliver all the hosted services over internet on demand. The ultimate goal of cloud computing paradigm is to realize computing as a utility. The cloud is rapidly maturing towards its goal to support a wide variety of enterprise and consumer services and real-world applications. Recently a movement towards cross cloud also called as multi-clouds or inters clouds or cloud-of-clouds has emerged which take advantage of multiple independent cloud provider offers for cloud resilience and dependability. This cross cloud represents the next logical wave in computing, enabling complex hybrid applications, cost and performance optimization, enhanced reliability, customer flexibility and lock-in avoidance. Providing testing as a service (TaaS) in cross clouds become hot topics in industry. Testing heterogeneous e-commerce sites, Software as a Service solutions, and Cloud based applications is extremely challenging. Many vendors are offering cloud testing services to support cloud-based applications. However, there is a lack of clear understanding about cloud testing in terms of concepts, issues, challenges, and needs. This paper surveys recent research related to testing of cross clouds applications and also simulates multilayer testing, service level agreement based testing on the large scale commercial testing environment. This paper proposes to build, integrate and implement an application prototype that initiates some of the above stages on a cross cloud platform. Our experimental results also shows efficient data protection of cross cloud testing.**

***Keywords*—Cloud testing, Performance Testing, Scalability testing, Data-as-a-service (DaaS), Platform-as-a-service(PaaS).**

I. INTRODUCTION

Cloud computing is an expression for combining a variety of computing concepts that are connected through a real time communication network i.e. internet. Cloud computing is the acronym for distributed computing over network that means it maintain facility to run a program/application connecting to various network services at the same time[1]. Testing of cloud based software applications is the main consumption in dynamic software development applications in cloud computing. Cloud computing provides various types services like Infrastructure as a service, Data as a Service etc. In this services cloud computing provides as a pay per use business model and cost effective performance resource utilization [2]. These services are shifted us into various undertaking services with different" product oriented activities to service-oriented reuse" and composition and online renting feasibilities[2]. Cloud computing is the acronym for distributed computing over network that means it maintain facility to run a program/application connecting to various network services at the same time. To verify application's support for various browser types and performance in each type can be accomplished with ease. For enhancing these applications in different types of services with more flexibility, scalability, portability and false tolerance capabilities of the software systems present in our cloud computing.

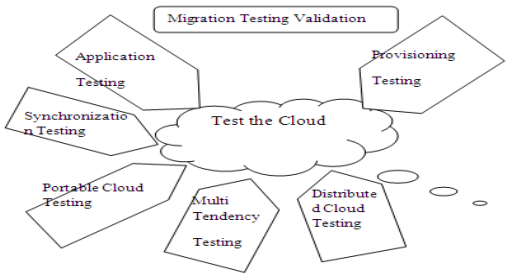

Fig 1. Cloud testing architecture.

A. Cloud Testing

Some organization pursuing testing in general load performance testing and other production service monitoring in particular challenged by the limited test budgets and meeting deadlines efficiently. Cloud testing is the one of the key solution of all the above challenges and all the problems discussed in real time applications. Different type of testing applications is discussed for solving above considerations efficiently. Stress testing is used to determine the ability of application to maintain a certain level of effectiveness beyond breaking point[5]. To verify application's support for various browser types and performance in each type can be accomplished with ease. Various tools enable automated website testing from the cloud[6]. Cloud testing is a process of testing in which web applications uses cloud computing environment and architectural aspects present into simulate real world user traffic by using cloud technologies and solutions.

We have to develop application testing, Provisioning testing, Synchronization testing, distributed cloud testing, Portable Cloud testing etc. We perform multiple testing strategies (tools) present in cloud computing simulation testing and SLA based testing. Traditionally more number of commercial tools were developed for test the dynamic web applications in cloud based software systems [1]. SOASTA is one of the testing tool developed for testing dynamic web applications in cloud. Some of The performance with aim to support crosses browser testing and its functionalities [2]. For

developing cloud web applications in cross cloud platform in heterogeneous virtualization environment across multiple cloud platforms have varied resource management and scheduler.

B. Cross cloud Testing

For maintaining heterogeneous cloud platforms we propose to develop Cross cloud application management platform (CAMP) to administrate heterogeneous clouds in order to control the application's life cycle. In this we establish Cloud Test Platform test the software cloud environments automatically [5]. CAMP can be integrated closely with other systems/platforms in industrial application environment, which provides cross platform services for different industrial requirements with large amount of resources in short time.

II. LITERATURE SURVEY

Cloud computing environments seek to simulate the real world user traffic as we load testing and stress testing websites. Compared to software testing cloud testing has several advantages: Reduce the cost leveraging the resources of the cloud computing operations present in the real time applications[2].

A. Forms of Cloud Testing

There are three different type of cloud testing environments present in the real time cloud applications [5].

1) Cloud/SaaS-oriented testing

This type of testing applications arrives specified with semantic relations in cloud testing operations. This testing can be performed inside the cloud by user and other SaaS service venders[1]. The primary objective is to assure the quality of the provided service functions offered in a cloud. Since clouds and SaaS usually provide certain service APIs and connectivity interfaces to their customers, it is required task for engineers to validate these APIs and connectivity in a cloud environment [4]. In addition, testing cloud-based or SaaS-based security services and functional features must be tested.

2) Online-based application testing on a cloud

This type of testing activities is performed to check online application on cloud by using with cloud-based large-scale traffic and user accesses[7].

3) Cloud-based application testing over clouds

This type of testing refers to the engineering activities performed to assure the quality of a cloud-based application crossing different clouds. This suggests that the system-level integration, function validation, performance evaluation, and scalability measurement scope with different cloud technologies[7].

III. EXISTING SYSTEM

For increasing the today's dynamic software application development testing faces a challenge of cost and scalability assurances. In this context we have to develop conventional cloud server with extended features checkout process by adding just in service testing, evaluation and ranking capabilities [5].

The cloud test service enables scalable and flexible collaborations among test participates. A tester carries published test case generations and simulate those test cases on different services, in that both provider and tester can be any party including services present in cloud computing.

Testing as a service operated as a public service in the business applications present in the cloud based software applications. These testing services are applicable for accessing external users with test environment of the publication present in the cloud computing. A self test harnesses' is developed to manage the scripting process present in the cloud computing software application system.

The existing system was developed only for testing multilayer and flexible and scalable testing with efficient data processing in cloud computing. One of the research concept of the Trusty worthy clouds, in that construct several clouds to build trusted cloud services using resources from different public clouds, implementing a cloud-of-cloud able to tolerant faults and intrusions on upto a certain number of providers.

IV. PROPOSED SYSTEM

For In the proposed system admin tests the users data usage of the cloud server by using the Multi layer testing, large scale & meta data testing, scalability testing, On-demand testing. The screen shots of the paper as below fig 2 shows the output of multi layer testing, fig 3 shows the result of large scale & meta data testing, fig 4 shows the scalability testing fig 5 shows the On-demand testing. Cross-Cloud Testing process can be done in real time cloud applications. This is the procedure for doing operations different type of cloud applications at a time.

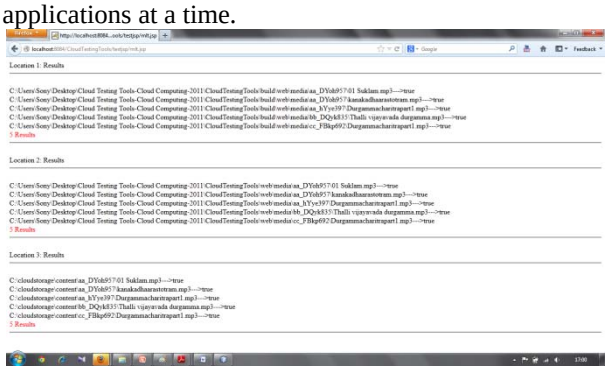

Fig 5. Multi Layer testing

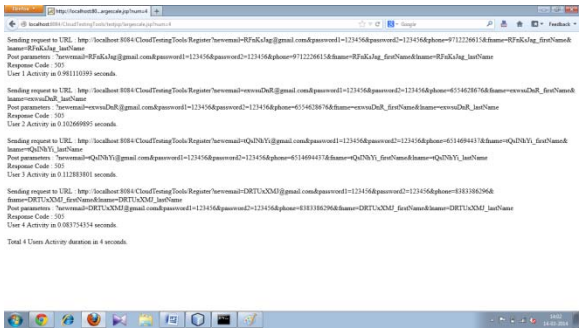

Fig 6. Large scale & Meta data testing

The fig 2,3,4,5 shows the results after the testing is performed the multi layer testing displays the results of different layers the data is presented .The large scale &meta data displays the data of the created meta data and the creation of the time taken for meta data. The On-demand testing displays the no. of hits and mean time of the requests of the certain operations like login, logout etc. The scalability testing displays the memory usage for the server. If cloud applications are developed in real time cloud format. It specifies the information of all users' data effects.

Cross cloud application format can be specified with systematic procedures in cloud computing operations efficiently.

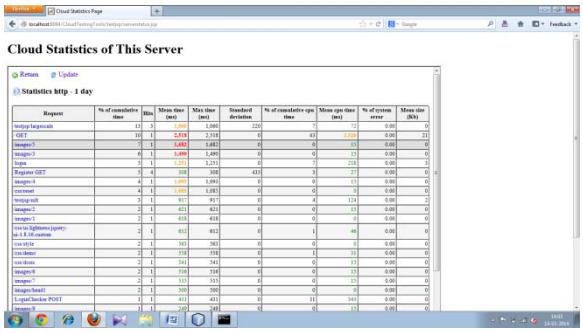

Fig 7. On-demand testing

Fig 8. Scalability testing

V. Experimental Setup

Cross Cloud system model contains three specific continuers for providing and accepting applications efficiently as follows: readers, writers and cloud storage providers. Where readers and writers are the client cloud processes. It defines cloud storage process on each cloud present in the cross cloud (multi cloud application). The cross cloud system addresses the system availability and confidentiality of data in their cloud data storage system by using multi cloud providers, combining Byzantine quorum system protocols

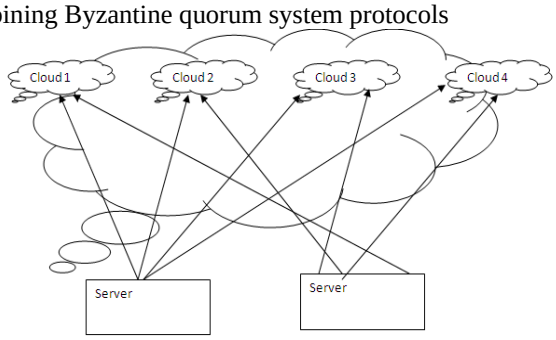

Fig 6. Cross cloud architecture

In addition, any subset of (n – f) storage cloud creates byzantine quorum protocols [7].

VI. Results Analysis

The main concept of the purpose to move from cross cloud is distributed reliability with sequential data storage applications. In addition to this approach reliable distributed storage utilizes subset of the Byzantine protocol fault tolerance applications/techniques suggestion in cross cloud software applications. For security considerations present in the proposed work by using multi cloud secret message sharing algorithm[2].

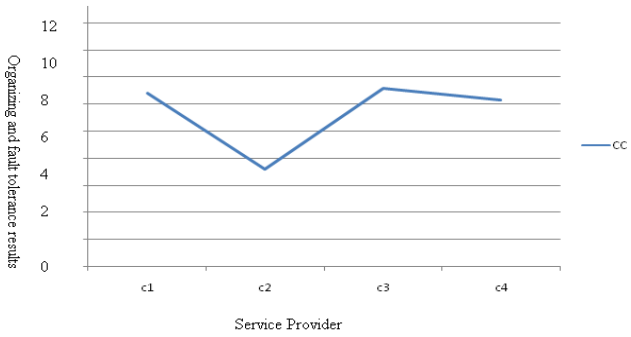

Fig 11. Organizing results of the service provider with equivalent results

As shown in the above discussion of cross cloud data storage with secret message sharing is developed as follows: Upload the cloud server application server into online software application. This service provider sharing information into other cloud applications present in the online service processing. Service provider access all the data present in the single cloud in online cloud service. We will provide security and testing of the individual cloud data sharing of the cross

cloud application [7]. Our experimental results show efficient cloud client operations on service provider of the cross cloud application.

VII. CONCLUSIONS

This paper addresses cloud based testing services that involves delivering the hosted services over internet. In this service providing applications some of the test services are free and some are cost based. This paper proposed to build, integrate and implement an application prototype on a cross cloud testing platform. This type of cloud environment achieves more flexibility to the users and providers. Further improvement of our proposed work can be specified with semantic relations of different cloud testing techniques for performing cross-cloud operations efficiently. And also we extend cross cloud testing for heterogeneous applications.

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