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The Importance of **Cloud Testing**

Testing an application over cloud includes testing for availability, disaster recovery, interoperability, multi-tenancy, performance, and security

As per a recent World Quality Report published by Capgemini, HP and Sogeti, the number of organizations having a full blown Testing Center of Excellence has risen from just 4% in 2011 to a staggering 26% in 2014. Now, a significant portion of testing budgets in recent times have gone to innovative testing practices which aim to bring down testing costs considerably in the long run. Cloud based software testing automation is definitely a step in this direction.

Some common examples of applications operating in a cloud-based environment are:

■ Accessing your bank accounts and making transactions while you travel

■ Mailing/accessing some work documents outside your office premises

■ Updating your Facebook & WhatsApp status while commuting

■ Updating your Mobile Applications on the go

No wonder, then, there's a rising trend among organizations today for adopting digital business strategies with the focus drifting away from redundant IT systems towards a cloud-based environment. When organizations use cloud computing environment and cloud infrastructure for testing applications, it is referred to as cloud testing. Usually, such infrastructure involves hardware and other variables that are subjected to real world conditions as close to the real-time functioning of the application.

Testing an application over cloud includes testing for

availability, disaster recovery, interoperability, multi-tenancy, performance, and security. It also involves five essential characteristics – broad network access, on-demand self-service, resource pooling, rapid elasticity and measured service. This makes cloud adoption involve careful planning, execution, and management, and Organizations thus need to thoroughly evaluate the most suited deployment model for their business goals – private, public, and hybrid cloud.

"The market for public cloud services is continuing to demonstrate high rates of growth across all markets and is expected to continue through 2017," said Sid Nag, Research Director at Gartner

Organizations also need to objectively assess which cloud service model – Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS)– suits them best.

Gartner predicts that the highest growth will come from cloud system infrastructure services (infrastructure as a service [IaaS]), which is projected to grow 38.4% in 2016.

With the importance duly understood, it is imperative that organizations give due diligence while identifying the right cloud provider for the testing of its applications on cloud. They also need to ensure that the end goal is achieved without any security lapses or data loss.

Cloud testing helps organizations overcome the commonly faced problems related to costs and time to market as organizations can leverage the various cloud computing models available to perform all types of testing in a very cost and effort effective manner, and also reduce data outages by utilizing the services of data centers.

BENEFITS OF CLOUD TESTING

The most obvious benefits of Cloud testing are better collaboration, faster testing, Virtualization-related benefits, along with lower IT management efforts. Following are a few additional benefits that organizations enjoy with Cloud testing in place:

■ **Cost Savings and ROI:** As it also supports migration of data to remotely located data centers, organizations adopting cloud services get the benefit of access to data anywhere, anytime. This, in turn reduces cost of infrastructure equipment management and maintenance, helping attain rapid ROI and faster time to market.

■ **Disaster Recovery:** Cloud computing, using the concept of virtualization, helps in making disaster recovery more cost effective and also reduces recovery times. This is because the entire server (OS, applications, data, and patches) can be bundled as a single entity on a vir-

tual server quickly. This reduces recovery times to a great extent in case of unforeseen issues.

■ **Multi-Tenancy Benefits using SaaS Cloud Computing:** By utilizing the multi-tenancy architecture, a single software application instance can be used to serve multiple customers. Under cloud computing, the scope of this architecture has increased with the existence of new service models that benefit from remote access and virtualization. SaaS providers can run a single instance of their applications on one database instance and allow multiple customers access it via web access, all the while ensuring privacy and safety of each tenant's data. This helps control costs.

Additionally, cloud testing also provides compelling benefits of flexibility, pay-per-use models, scalability, and testing complex test environments involving multiple mobile OS, browsers and platform combinations. Cloud-based test automation has emerged as the savior for applications that are dynamic, complex, distributed, and component-based. Utilizing the cloud computing infrastructure reduces the unit cost of computing and increases the testing effectiveness. Selenium is a popular tool of choice for cloud-based testing due to its open source nature. You can either setup your own selenium grid in cloud or use something like Sauce, an off the shelf solution.

Market reports estimate that as many as 90% of the organizations in UK are implementing cloud-based services to meet their specific business objectives.

CONCLUSION

The cloud computing environment also pose a number of challenges that enterprises need to tackle. These challenges are only multiplied with the challenges of testing applications on the Cloud. The reason is that it entails testing applications across various modules and environments to identify issues. It is thus important to understand and overcome these challenges to ensure that applications operate seamlessly and securely on the cloud. It is also important to confirm that the entire process helps gain competitive edge in the marketplace. Irrespective of the existing challenges, cloud computing will sustain and empower organizations to stay ahead and continue to remain competent. An experienced testing partner, who has in-depth domain expertise across various cloud service models, deployment models and essential characteristics, can only enable successful migration of your data and applications to the cloud, their functioning and performance.

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