

# Cloud Testing Testing on the Cloud

## Global Technology Solutions

Co-Author and Domain Knowledge  
Noman Khan, Director Technology Solutions

Co-Author and Subject Matter Expert  
Ravi Kumar, Manager Technology Solutions



[ technology + passion ] - risk

## Executive Summary

Cloud computing provides an attractive solution for quality assurance testing of software and applications.

Software testing is conventionally viewed as an activity which requires heavy investment in infrastructure and resources, which typically fall under a development cycle. It is important to note the growing complexity of business applications and interoperability challenges are adding to the cost of testing facilities which can scale up or down based on need. Virtualization software, which makes it possible to run multiple operating systems and multiple applications on the same server at the same time, has certainly provided foundational support to this business need, however the upfront set-up costs and large overhead can still be cost-prohibitive.

*According to Frost and Sullivan, “the market for cloud infrastructure testing and cloud application monitoring markets will hit nearly \$900 (£556) million by 2017.”*

The benefits of software testing on the cloud are largely economic, however, they also include scalability, flexibility, reliability and faster speed to market. Software development cycle times shows no signs of slowing down and QA testing is often a gating factor.

## The Challenge of Testing

While testing determines the quality of code, and outcome of functional design of applications, it does come with its own set of challenges.

### Operational Costs

The operational overhead for setting up testing lab environments and infrastructure can be costly and error-prone. This cost can multiply exponentially when organizations have to support multiple products and release cycles. Effective testing requires test labs to have powerful hardware, abundant computing power, and ample network bandwidth. Full utilization of test labs can be challenging as not all release cycles are on time for testing, resulting in idle infrastructure.

### Complex Systems

Today’s software applications are complex in nature and typically developed for distributed and connected systems. Testing for these systems can be demanding. There is a large operating overhead from an infrastructure perspective. For example, test labs have to house multiple hardware configurations and versions to support different testing scenarios, such as operating systems, database versions, and browsers. Testing complex systems has the added overhead of testing different consumption points, such as PC’s, MacBooks, Tablets, and Smart Phones. This is further exacerbated by these end points having multiple hardware and software configurations which require upfront investment from a technology, people and process perspective.



## Testing on the Cloud

Cloud-based software testing refers to testing and measurement activities on a cloud-based environment and infrastructure by leveraging cloud technologies and solutions.

Testing on the cloud offers the benefits of cloud computing infrastructure, such as computing power at a reduce unit cost, testing efficiency and coverage, and most importantly the resource aspect of testing.

### Performance Testing

Cloud computing is infinitely scalable to meet infrastructure needs. Traditional testing would require high-end servers for performance testing and generally falls short in bringing you close to realistic performance testing. With Cloud testing, the test lab can provision as many servers needed as well as different testing environments reducing test planning and execution.

### Faster Testing

Today's development process require incremental feature development. Agile testing methods are needed to test a feature against several environments. Additionally, user based testing can also be completed to ensure critical information is shared with developers.

Cloud can be used as a test bed for real world scenarios. Traditionally enterprise testing methods call for establishing test environments which address:

- Alpha testing
- Boundary testing
- Negative testing
- Automated testing
- Stress and load testing
- Performance testing
- Beta testing
- Reliability testing
- Acceptance testing
- Out-of-box audits

The cloud offers all of these testing environments in a faster and reusable way in-between development cycles and provides flexibility to create a realistic production environment.

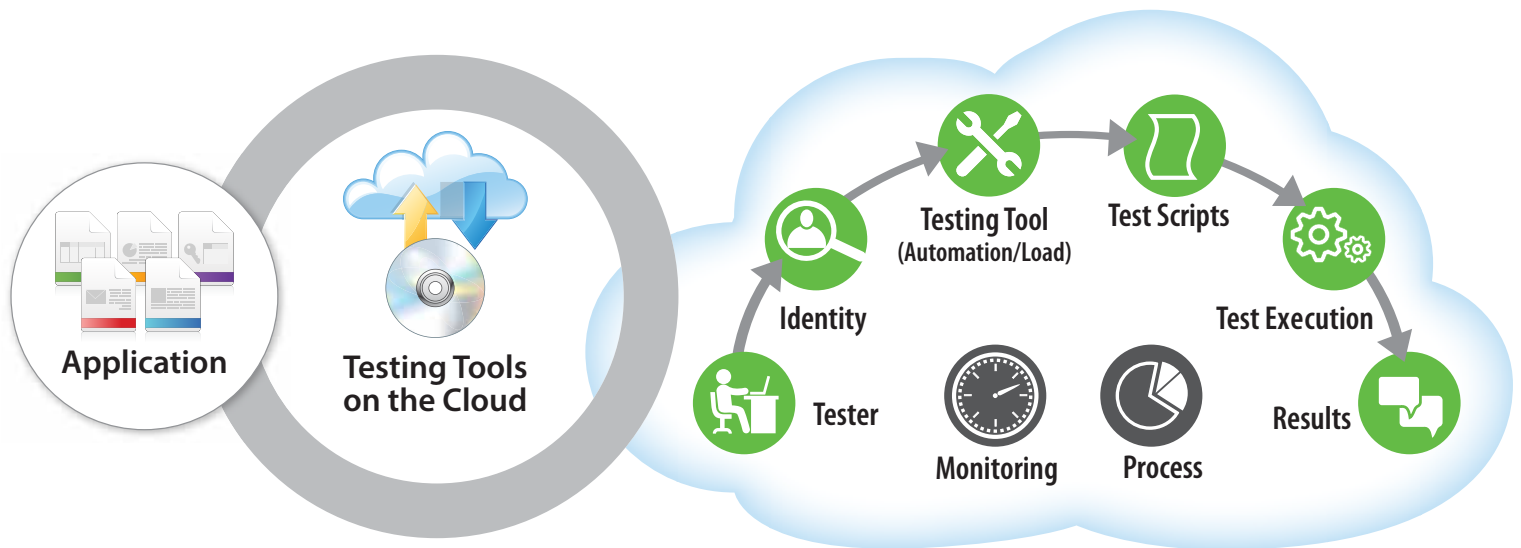
### Availability of Testing Tools

Cloud computing has prompted Cloud testing tools which can be used on demand, thus reducing the cost of ownership and increasing flexibility. Cloud-based tools also enhance existing agile development cycles, resulting in continuous testing, high quality testing and speed to market. Testing on the cloud also offers better collaboration from a planning and test execution perspective.



## Include Cloud in your Testing Strategy

Consider Testing on the Cloud part as part of your longer term testing strategy. The strategy should include a feasibility study and proof of concepts to gain confidence in the technology.



## Build Understanding of the Cloud

Testing on the Cloud is an ideal choice for many organizations. However, to make an investment in Cloud, it is important to develop an understanding of the technology, its limitations and potential security issues.

## Establish a Testing Strategy

Quality planning involves establishing a testing strategy. A test strategy should include the types of testing to be completed and the cost benefits of migrating to the cloud. Additionally the testing strategy should include a comparison of traditional testing to testing on the cloud and highlight areas of efficiencies. The strategy should also document any risks with testing on the cloud and a mitigation plan.

## Build Testing Infrastructure

Testing on the cloud will also require a review and understanding of the investment of infrastructure for the testing environments. For example the Cloud Service Provider will need to know the types of testing environments, tools, operating systems, databases, network bandwidth and the duration of the testing infrastructure needed per development cycle.

## Select a Cloud Service Provider

Testing on the Cloud requires a thorough understanding of the service provider capabilities. The service provider assessment should be completed from several angles which address quality of services, how security is handled, and reliability. Additionally, an organization should seek out service providers who have experience in the testing domain.

## Conclusion

Organizations can leverage cloud based testing for higher flexibility and lower cost. 'Testing as a Service' provides organizations an option to set up a virtual test lab without any upfront investment in lab infrastructure, licenses for automation tools or skilled resources. The Pay-Per-Usage pricing models are great in controlling IT budgets and maximizing ROI. Testing on the cloud is starting to gain traction with enterprises moving their on premise applications to the cloud.

Cloud Testing is a solution which can deliver productivity much faster than traditional testing. Unlimited storage, infrastructure on demand with scalability, flexibility and infinite testing environments reduce the execution time of testing for large applications and can be very cost-effective.

---

## About SDG

SDG is a leading provider of technology, consulting and risk management solutions to strengthen enterprise businesses while managing IT risk. We focus on six practices: Risk and Security; Identity and Access Governance; Digital Collaboration; Quality Assurance; Mobility and Cloud.

*“SDG helps enterprises realize their dreams by helping them develop, manage and deploy solutions with acceptable risk.”*

For over two decades, SDG has enabled enterprises to realize their dreams by helping them develop, manage and deploy solutions with acceptable risk. We combine technology, thought leadership and a relentless passion for customer success. SDG partners with enterprise brands, but we specifically focus on mitigating client IT risk. Our ultimate goal is to help enterprises realize the opportunity of technology, increase innovation, improve speed-to-market and maximize returns on investment.

