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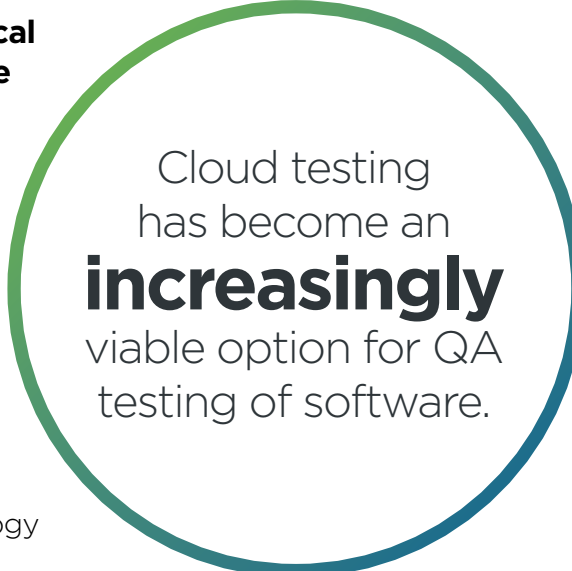
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Software Testing
in the Cloud

From lower costs to scalability to agile workflow support, cloud-based
software testing has a number of advantages over conventional testing.

Software testing is generally acknowledged as a mission-critical function that requires a significant investment in infrastructure and resources. The growing complexity of business applications, as well as ongoing interoperability obstacles, has added to the expense of testing facilities. Virtualization software, which makes it possible to run multiple operating systems and applications simultaneously on the same server, has provided foundational support for this business need; however, the upfront costs and large overhead can still represent roadblocks for organizations. Fortunately, as challenges related to conventional software testing mount, cloud software testing has become an increasingly viable alternative for conducting quality assurance (QA) testing of software and applications. While the benefits of software testing in the cloud are largely financial, the scalability, flexibility, and reliability of the technology are also strong selling points.
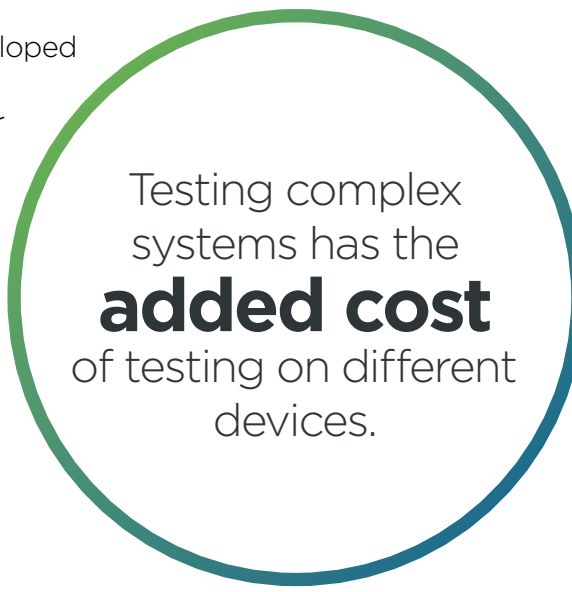
Cloud testing has become an **increasingly** viable option for QA testing of software.

Disadvantages of Conventional Testing

The operational overhead related to setting up testing lab environments and infrastructure is costly. This expenditure multiplies exponentially when organizations must support multiple products and release cycles. Effective software testing requires a test lab to be equipped with powerful hardware, abundant computing power, and ample network bandwidth. Since not all release cycles meet deadlines for testing, it's difficult to fully utilize test labs—which results in higher costs due to maintaining idle IT infrastructure.

Today's software applications are complex in nature and typically developed for distributed and connected systems. Testing for these kinds of systems is demanding and often causes a large operating overhead for infrastructure. For example, test labs need 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 cost of testing on different devices, such as PCs, MacBooks, tablets, and smartphones. Testing can be further complicated because these end points have multiple hardware and software configurations that require investments in technology, people, and processes.

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Advantages of Cloud Testing

Cloud testing is a form of software testing in which web applications use cloud computing environments to simulate real-world user traffic. Cloud testing takes advantage of the cloud infrastructure, and its benefits include reduced unit cost of power and increased testing efficiency and coverage. Cloud computing can also be scaled to meet infrastructure needs. Conventional software testing requires high-end servers for performance testing that generally fall short in approximating realistic performance testing.
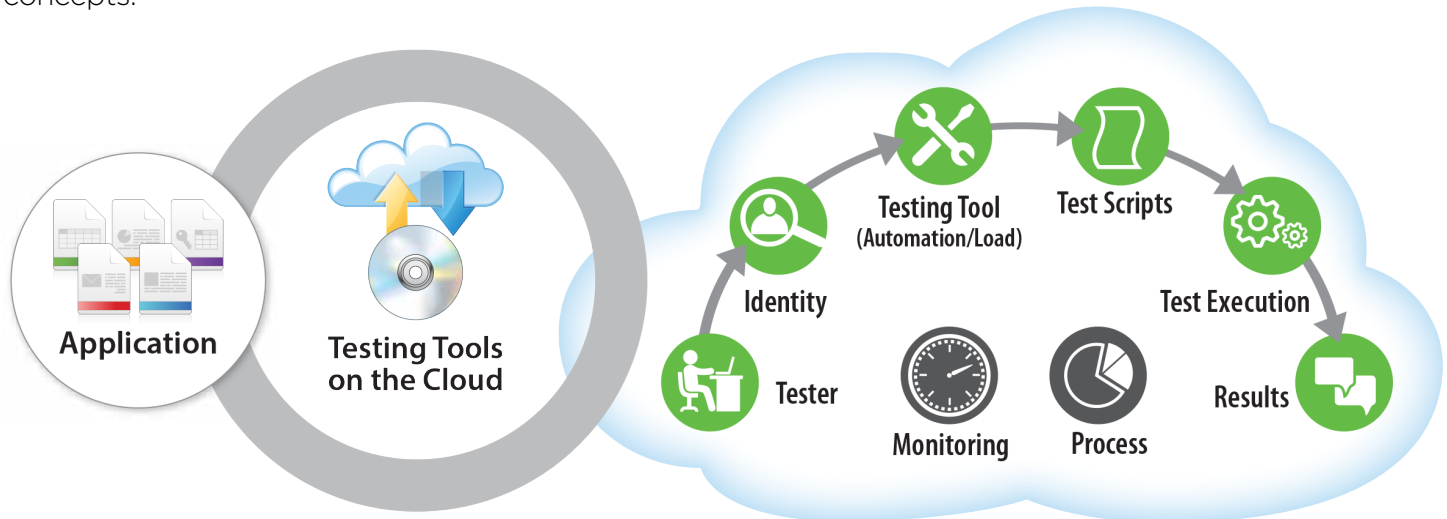
With cloud testing, the test lab can provision multiple servers and various testing environments to optimize test planning and execution. Today's development processes require incremental feature development. Agile testing methods are necessary for testing a feature against several environments. Additionally, user-based testing can be done to ensure critical information is shared with developers. A decided advantage of cloud testing over conventional testing is that the cloud can be used as a test bed for real-world scenarios. Typically, conventional testing methods must establish multiple test environments to support:

- **Alpha testing**
- **Performance testing**
- **Boundary testing**
- **Beta testing**
- **Negative testing**

- **Reliability testing**
- **Automated testing**
- **Acceptance testing**
- **Stress and load testing**
- **Out-of-box audit**

The cloud provides these testing environments between development cycles and offers developers the ability to create a realistic production environment whenever needed. The adoption of cloud computing has prompted the development of cloud-testing tools that can be used on demand, thus reducing the cost of ownership and increasing flexibility. Cloud-based tools enhance existing agile development cycles, which results in continuous, high-quality testing and speed to market. Testing on the cloud also enhances collaboration from a planning and test execution standpoint.

Best Practices for Leveraging Cloud Testing

It makes good business sense to include cloud testing as part of a long-term testing strategy. In order to build confidence in the technology, the testing strategy should include a feasibility study and proof of concepts.

Gain In-Depth Knowledge of Cloud Technology

Before making the leap to cloud testing, it's important to gain an in-depth understanding of the technology, its limitations, and potential security issues.

Establish a Testing Strategy

Quality planning involves establishing a testing strategy that considers the types of testing to be completed and the cost benefits of migrating to the cloud. Additionally, the testing strategy should compare conventional testing to cloud testing in order to identify the efficiencies and deficiencies of each approach. It's also important for the strategy to outline the potential risks of cloud testing and include a mitigation plan.

Build a Testing Infrastructure

Before the cloud test environment can be deployed, the development team should conduct a review of both the current infrastructure and the infrastructure needed for the cloud-testing environment. The types of testing environments, tools, operating systems, databases, network bandwidth, and the duration of the testing infrastructure needed per development cycle must be determined before engaging a cloud service provider.

Choose a Proven Cloud Service Provider

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Conclusion

Because cloud testing can help companies avoid many of the challenges associated with conventional testing, organizations of all sizes and sectors are steadily embracing its technology. The ability to outsource Testing as a Service (TaaS) enables organizations to build a virtual test lab without any upfront investment in infrastructure, licenses for automation tools, or skilled resources. Another benefit of cloud testing is the Pay-Per-Usage pricing model, which can help organizations stay on budget and maximize their ROI. Cloud testing delivers scalability, unlimited storage, on-demand access to infrastructure, flexible and infinite testing environments, and cost savings—all of which make it a viable option for organizations seeking to optimize their software testing environment.

Cloud testing can help companies avoid many of the **challenges** associated with conventional testing.

ABOUT SDG

With more than 30 years of experience partnering with global enterprises on complex business and IT initiatives, SDG is a trusted provider of advisory, transformation, and managed services. The firm empowers organizations to strengthen cyber resilience by integrating AI into identity, threat, and risk management solutions that protect digital assets and deliver measurable business value. Learn more at www.sdgc.com.

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