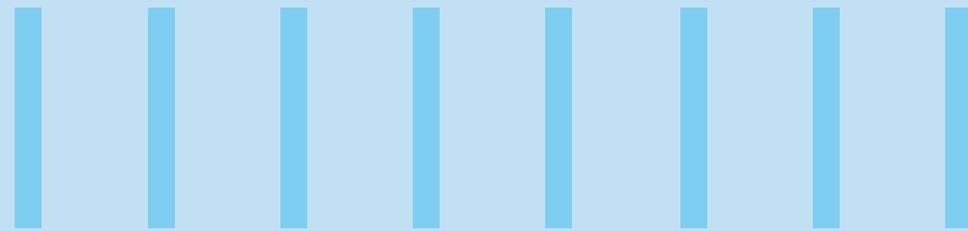# DE-RISK CLOUD MIGRATION WITH THE RIGHT VALIDATION APPROACH

Infosys Cloud Quality Assessment and Transformation (ICQAT)

Abstract

More and more companies are availing of cloud services, a growth that has been fueled by the Covid-19 pandemic. Cloud offers enterprises certain inherent advantages. But the risks are often hidden, resulting in failures. Comprehensive validation strategies expose these risks and give enterprises the confidence to mitigate risk early in the migration planning phases.

This paper describes the need for risk management, reliability, and resiliency on cloud. It also looks at how Infosys Cloud Quality Assessment and Transformation (ICQAT) framework addresses the challenges and risks of cloud migration while assuring expected return on investment.

Understanding the Impact

Cloud computing has been one of the principal technologies that is driving transformation and innovation across businesses. This is revolutionizing the IT ecosystem, particularly infrastructure and applications. The primary benefits of cloud architecture are elasticity and ease of adding new services on demand, which helps enterprises respond faster to changing business needs and achieve high return on investment (RoI).

While there are several new business benefits when using cloud, a well-managed quality strategy is needed to enhance business value. Without this, there could be defects in the cloud implementation leading to adverse impact. This is observed among companies that revert from a cloud-based application to an on-premises one after failing to see the expected returns. Some reported examples include the unencrypted back-up on an unsecured S3 bucket in AWS as well as the VM capacity constraints reported in Azure, which

impacted developers and Azure pipelines, resulting in delivery delays. In another incident, faulty software deployment caused a massive spike in CPU utilization, wherein visitors to a specific website received 502 errors, resulting in site outage.

A critical evaluation of cloud quality issues on various dimensions like cloud disposition models, architecture, data, security, resilience, compliance, etc. hold the key to achieving the desired business value in cloud transformation programs.

The 3R Approach – Risk, Reliability, and Resiliency

Based on Infosys' experience, a successful cloud quality strategy requires an approach that caters to the three dimensions of risk management, reliability, and resiliency. These are further explained below:

- **Risk management** – Technology risks like incompatible architecture, integration challenges, and modernization issues result in many defects. The right quality engineering (QE)[1] strategy can address these risks by leveraging 'right shift' techniques that identify architecture, infrastructure, application, and compliance quality requirements. Evaluating the cloud

quality risks on various dimensions such as application architecture, cloud disposition models, data, security, performance, compliance, DevOps, etc., helps identify quality risks proactively by involving the right stakeholders. This is critical for risk management.

- **Reliability** – Reliability is a measure of product performance in a dynamically changing environment. Cloud reliability depends on data and all its dimensions including data storage, data accuracy, secure network connections, service reliability, various code changes, etc. Thus, it is critical to understand the risks

involved in operational readiness and platform readiness. With rolling software updates becoming a common practice, testing too plays a key role in ensuring reliability of business systems.

- **Resilience** – Resiliency is the ability of a cloud-based service to withstand certain types of failure and remain functional from the customer perspective. The validation approach must introduce anomalies across the system layers and measure the impact of these on resilience.

About Infosys Cloud Quality Assessment and Transformation (ICQAT)

Infosys Cloud Quality Assessment and Transformation (ICQAT) is an 'as-a-service' offering that is fully aligned with Microsoft Cloud Adoption Framework (CAF). Part of Infosys Cobalt, Infosys Cloud Quality Assessment and Transformation helps customers assess the quality risks in cloud implementations. It guides developers in building a comprehensive test strategy to validate cloud implementations.

The service covers IaaS, PaaS, and SaaS implementation testing requirements across various IT aspects. These include infrastructure, database migration, application implementation (containerization and Kubernetes), cloud formation validation, and non-functional requirements like load, performance, and security testing. ICQAT enables companies to accelerate testing and proactively flag quality concerns when adopting various cloud models such as lift-and-shift, re-factor, and re-platform. It also helps build and deploy cloud-native and DevOps implementations using Azure cloud services.

The ICQAT service has been built leveraging best practices from Infosys Enterprise Quality Assurance Model (EQATM)[2]. It offers the following key features:

- A detailed questionnaire covering IaaS, PaaS, and SaaS implementations to derive the right testing strategy. It comprises 200 questions with nearly 2000 response options.

- Cloud risk assessment and proactive profiling. This is a score-based risk assessment with recommendations across two dimensions – extent of specific types of testing and distribution of focus for different types of testing.

- A customized test strategy based on cloud constructs across eight different testing types

- Cloud automation frameworks, tooling, and DevOps recommendations

- Cloud testing accelerator recommendations[3]

Azure CAF – Cloud Adoption Framework

| Strategy | Plan | Ready | Adopt | Govern and manage |

| Quality assessment and strategy | Cloud validation plan | Quality assurance strategy blueprint | Automated testing accelerators | Resilience and reliability validation |

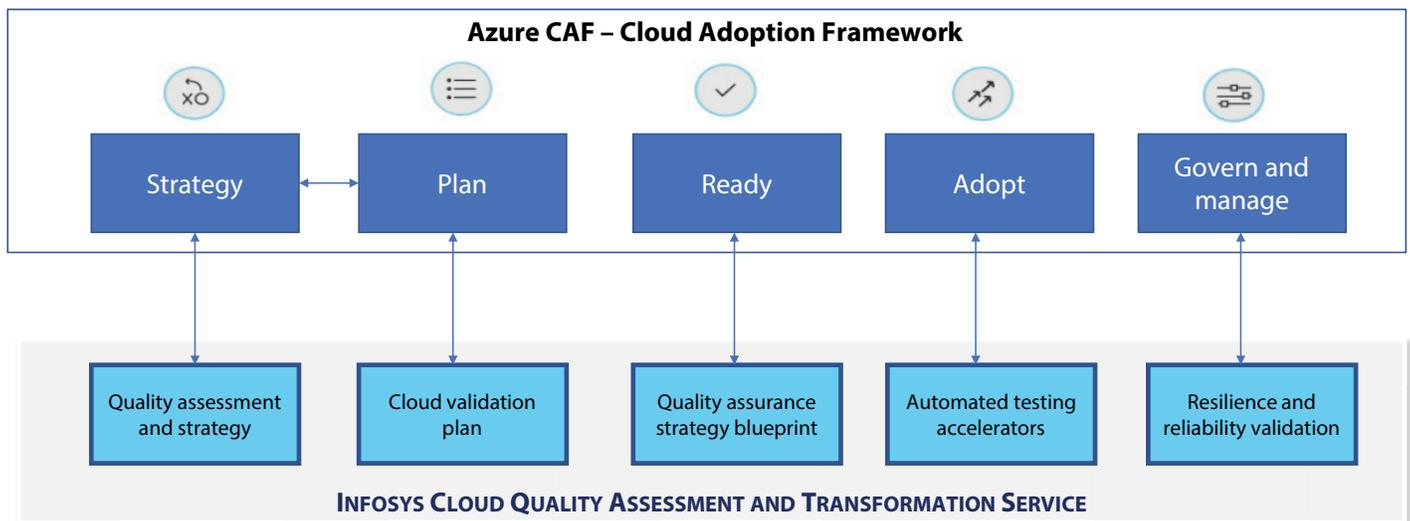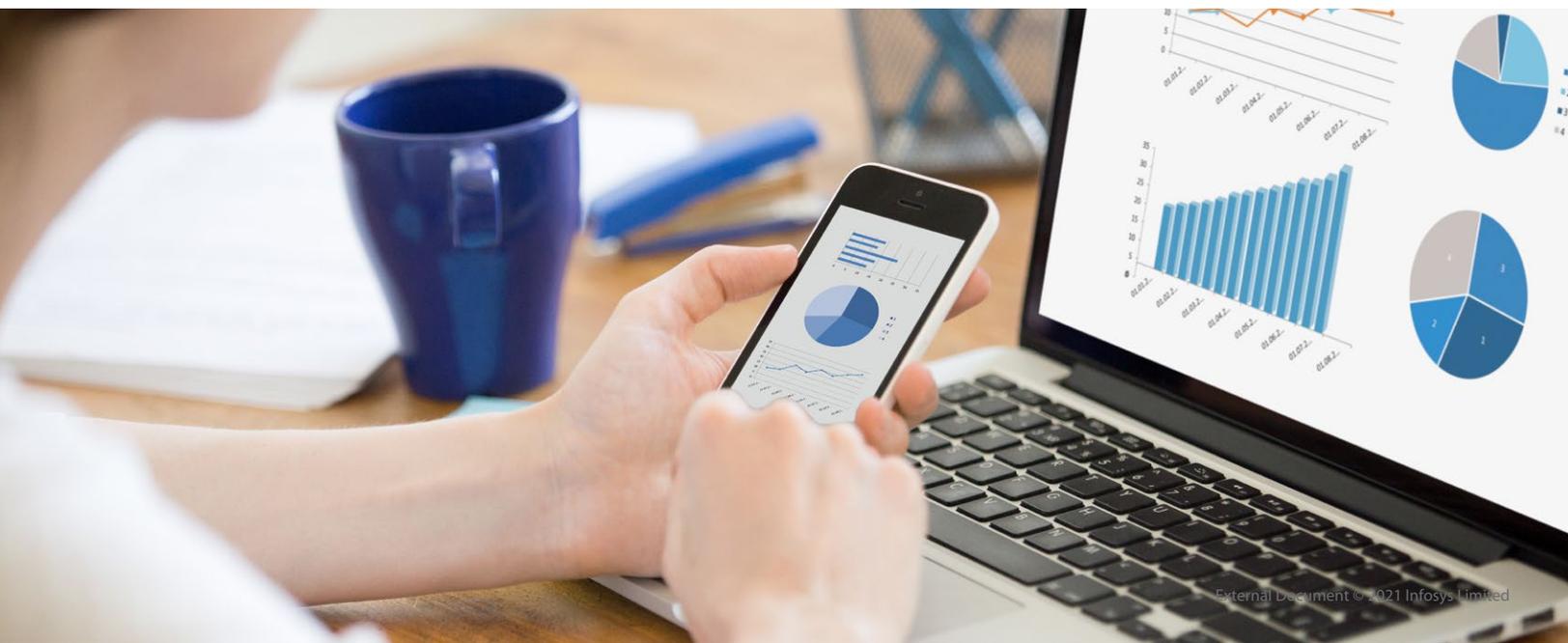**INFOSYS CLOUD QUALITY ASSESSMENT AND TRANSFORMATION SERVICE**

Figure 1 – Approach to mitigate quality risk in cloud adoption

ICQAT Assessment Framework

The Infosys Cloud Quality Assessment and Transformation assessment framework covers 8 dimensions of implementation across 20 focus areas in validation and testing on cloud. The framework is aligned with the Microsoft Cloud Adoption Framework from Azure.
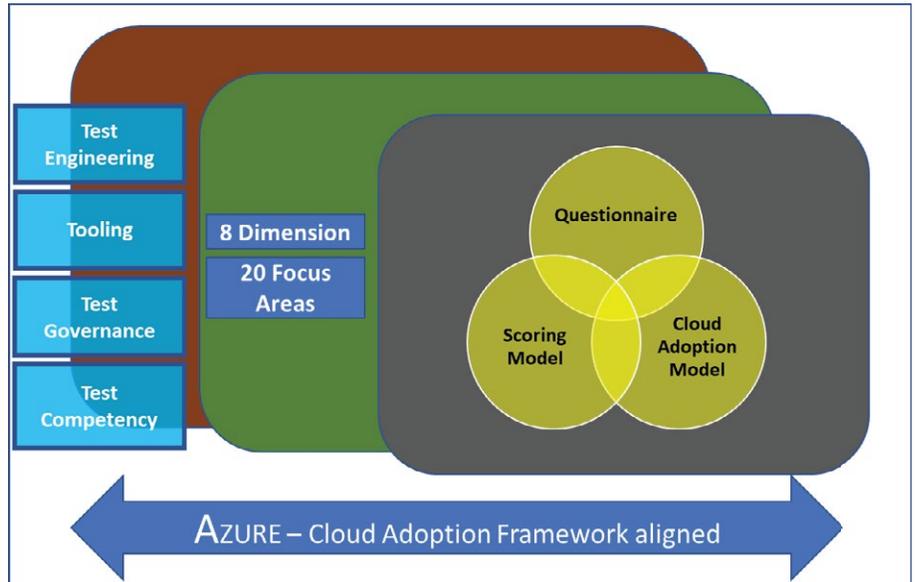

Figure 2 – ICQAT assessment framework

The assessment is typically conducted over eight weeks. A well-defined test strategy and guidance is provided at the end of the assessment with recommendations for test methodology and processes to be adopted on cloud. The final report includes key quality assurance focus areas to be identified for ensuring a risk-free migration. It also provides suggestions on tooling for automation with cloud-native quality assurance accelerators that drive agility and ensure compliance.
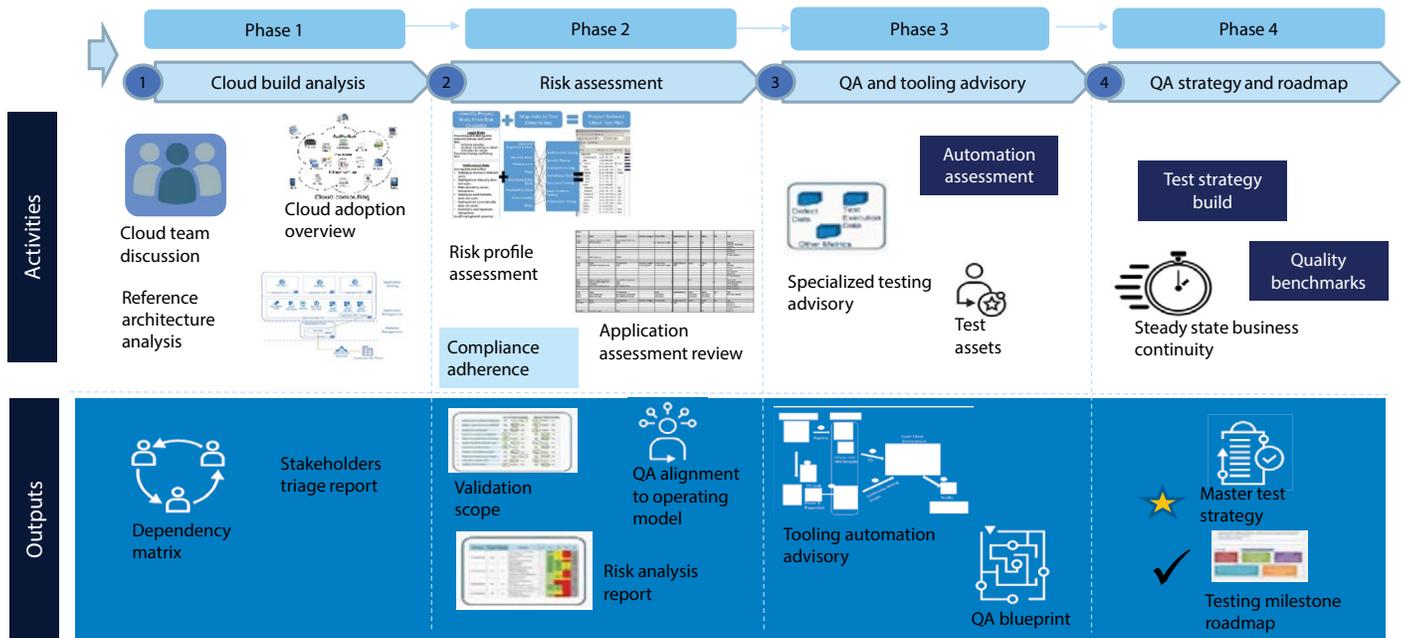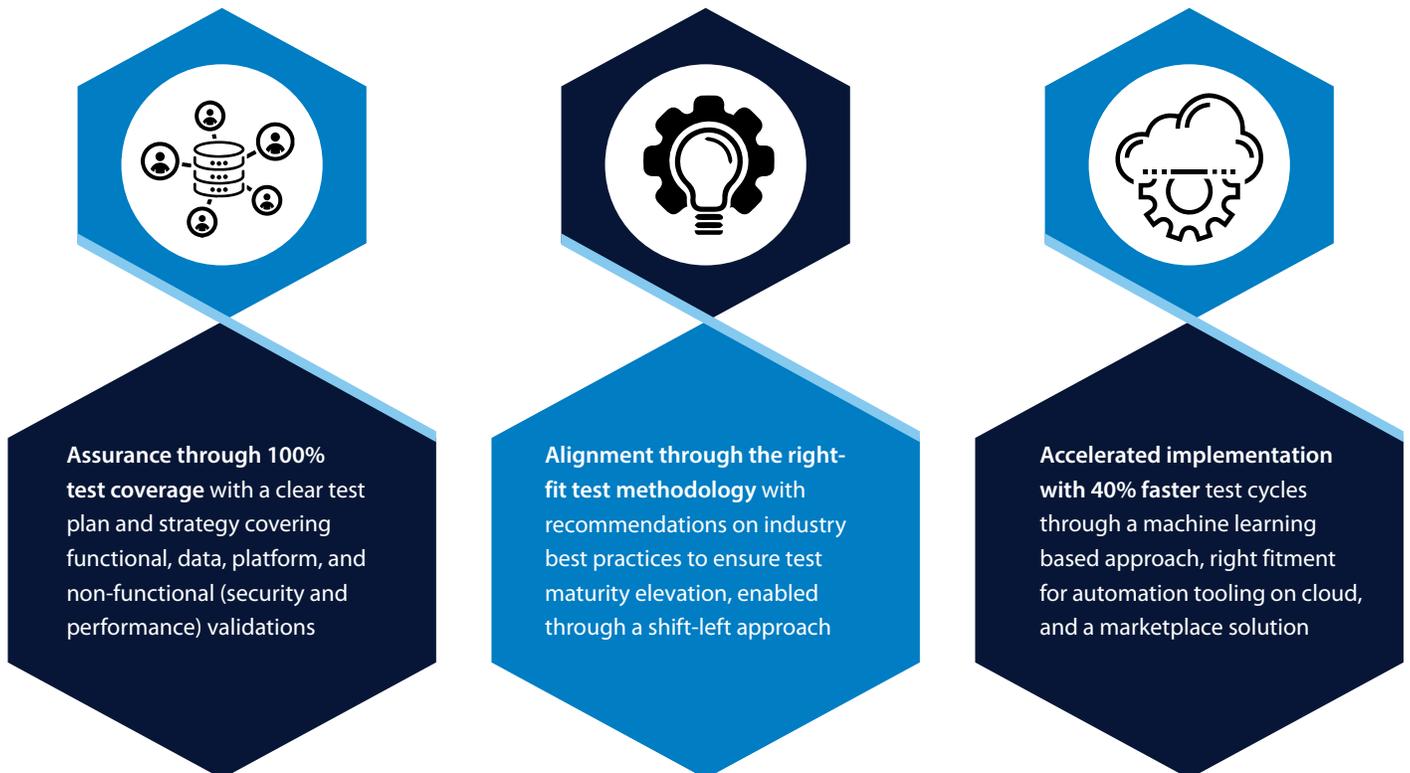

Figure 3 – ICQAT implementation plan and assessment phases

Benefits

Implementing ICQAT provides 360-degree insights into quality issues and assists decision-making. Enterprises benefit from a risk-free migration that aligns with industry best practices. Accelerated automation driven by cloud-native tooling is another takeaway. The key benefits include:

Assurance through 100% test coverage with a clear test plan and strategy covering functional, data, platform, and non-functional (security and performance) validations

Alignment through the right-fit test methodology with recommendations on industry best practices to ensure test maturity elevation, enabled through a shift-left approach

Accelerated implementation with 40% faster test cycles through a machine learning based approach, right fitment for automation tooling on cloud, and a marketplace solution

Assures coverage

The granular focus on validation covers checks on the application and data being moved to cloud, ensuring 100% test coverage

100% coverage

Aligns with methodology

Assessment recommendations provide a view on industry best practices for test maturity elevation and validation processes

Zero failures

Drives agility

Plug-and-play automation frameworks are available on Azure Marketplace to enable automated testing across front-end and back-end interfaces

>40% faster

Figure 4 – Benefits of ICQAT service

The Infosys Advantage

Infosys Cloud Quality Assessment and Transformation is an integral part of Infosys Cobalt[4]. Infosys Cobalt is a set of services, solutions, and platforms that act as a force multiplier for cloud-powered enterprise transformation. Infosys Cobalt helps businesses redesign the enterprise from the core and build new cloud-first capabilities to create seamless experiences in public, private, and hybrid clouds across PaaS, SaaS, and IaaS landscapes.

The Cobalt Store provides access to quality assurance automation accelerators such as Infosys Cloud Data Validation, Infosys Cloud Infrastructure Validation solutions (Microsoft Preferred and Azure Marketplace Solution), and Infosys Cloud Infrastructure Validation. These ensure faster test cycles and wider coverage through a machine learning-first approach to quality assurance.

By leveraging the Infosys Cobalt Community, enterprises can rapidly launch solutions and create business models to meet changing market needs while complying with the most stringent global, regional, and industry regulatory and security standards.

In addition to Azure, Infosys offers ICQAT customized Quality assessment for AWS and GCP as well.

Conclusion

The right validation strategy to ensure smooth migration must include steps like adopting the right culture, mindset, and processes across the organization as well as adopting the right automation strategy, and focusing on security and performance. A thorough and comprehensive cloud validation strategy helps in early engagement, addresses the testing needs, provisions the right testing techniques, and mitigates risk.

Infosys Cloud Quality Assessment and Transformation is designed to help enterprises achieve comprehensive, rapid, and automated testing for wider coverage and better quality. The framework is based on a detailed assessment along with layered quality assurance to address inherent risks. By combining different service offerings, tools, and accelerators from best-in-class providers, Infosys provides a cost-effective and risk-free end-to-end validation solution for enterprises looking to migrate to cloud.

Ask for ICQAT services from Azure Marketplace here.

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Infosys Cobalt is a set of services, solutions and platforms for enterprises to accelerate their cloud journey. It offers over 14,000 cloud assets, over 200 industry cloud solution blueprints and a thriving community of cloud business and technology practitioners to drive increased business value. With Infosys Cobalt, regulatory and security compliance, along with technical and financial governance comes baked into every solution delivered.

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