

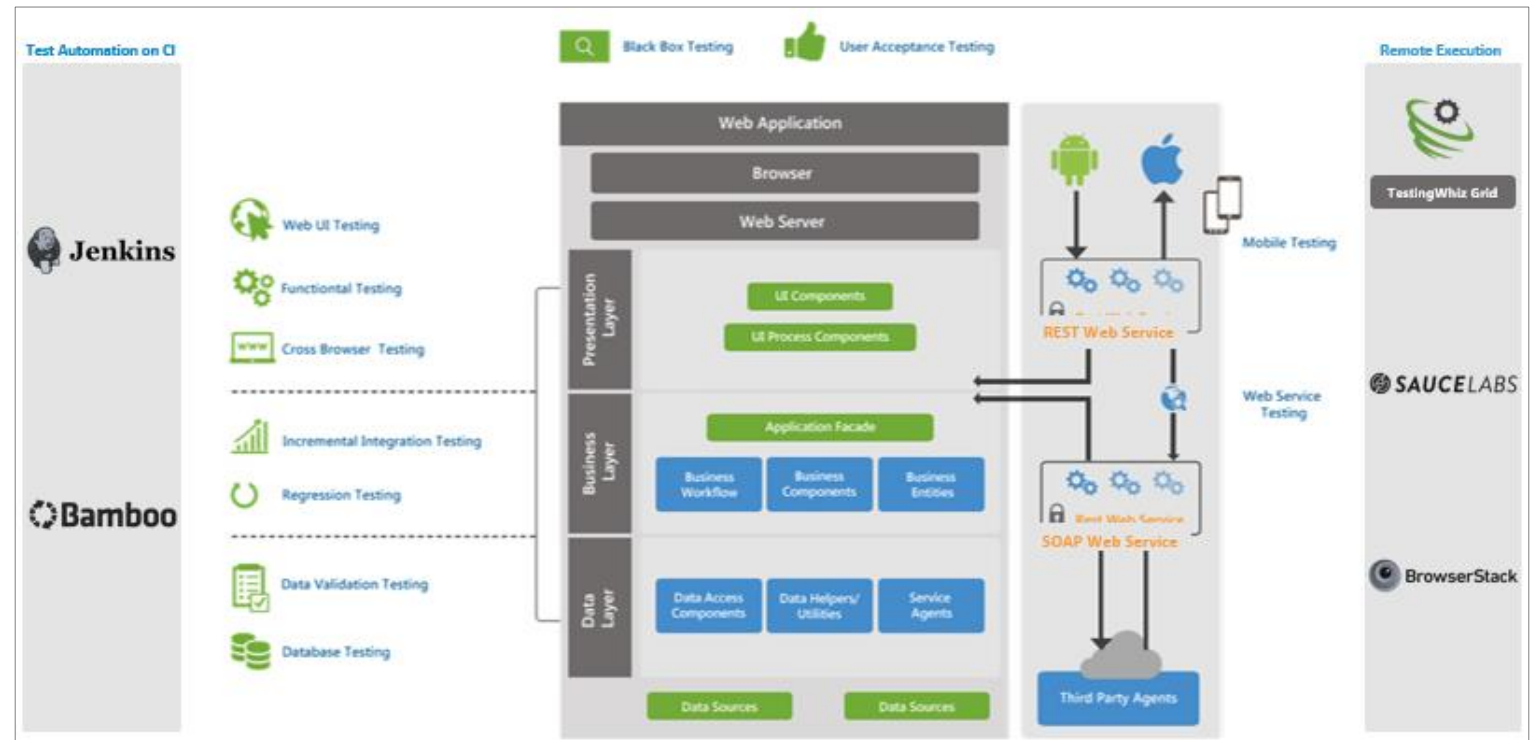


## Webinar: API Test Automation Best Practices for Continuous Business Connectivity

# About TestingWhiz

TestingWhiz is a Codeless Automated Testing Solution for automating testing of Web, Mobile, Database, API, Cloud, & Desktop Apps. With its unique Codeless capability and FAST (Flexible Automation Scripting Technology) Automation Engine, it helps global enterprises meet quality objectives such as:

- Improving Quality & Reliability of Solutions
- Delivering Applications to Market Faster
- Getting Started with Automation Quickly
- Saving Time & Cost
- Pursuing Innovation



TestingWhiz is a product of Cygnet Group, a company incorporated in the year 2000 with CMMi-3 and ISO Certified IT consulting practices.

# Importance of API

APIs, or Application Program Interfaces are gateways to enable B2B integration. They connect different software components (apps, data, servers, operating systems, databases, frameworks, hardware systems, software libraries, etc.) by facilitating communication through HTTP/HTTPS protocols.

Integrates internal and external IT systems

Expands business operations

Facilitates communication between devices, apps, and networks

Helps perform business-critical functions

Ensures data scalability across different environments

Reduces data silos in the company

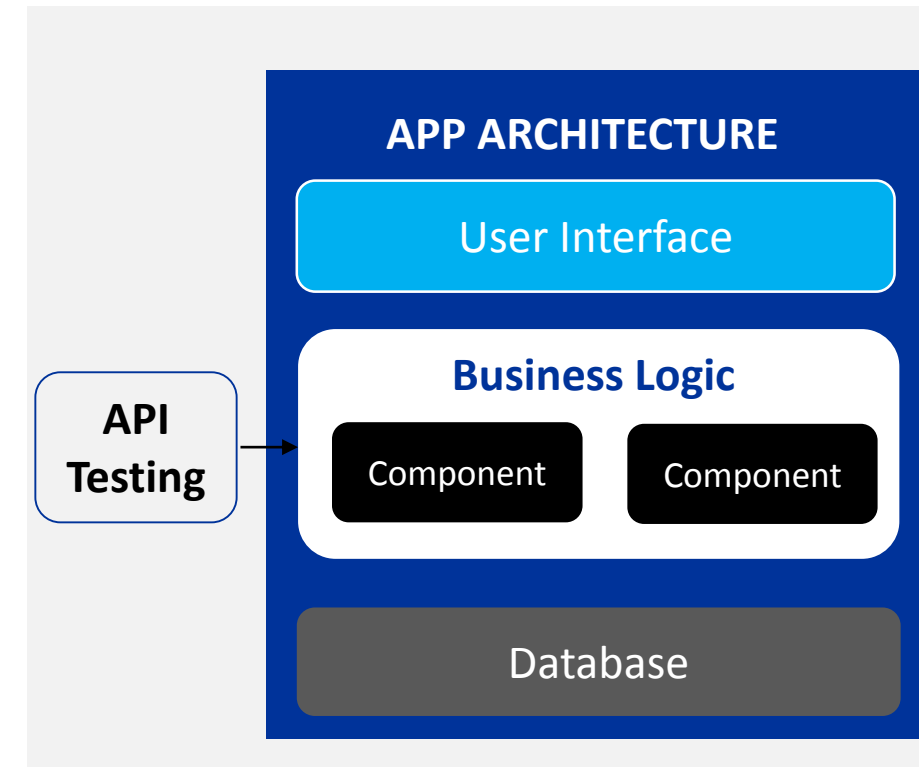
Drives flexibility by separating application and client server

Accelerates business transactions & workflows

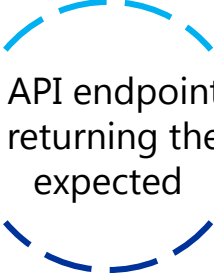
Ensures interoperability of connected systems

# Why API Testing?

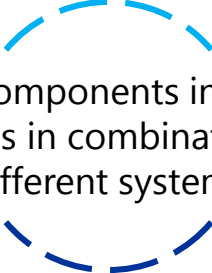
- To **test the core functionality apps** since GUI or Unit testing alone cannot verify the end-to-end functioning of applications.
- To **confirm functionality, reliability, performance, and security** of the connected and distributed systems.
- To **identify defects behind the scenes**, which otherwise could fester user experience and increase error.
- To **validate the accuracy of all the transactions**, calculations and business results that occur through API layer.
- To **determine the interoperability** of IOT devices and connected systems and ensure that the information extracted by sensors are correct.
- To **confirm behavior and interactions** of the application in different scenarios to perform business functions.



# Common API Testing Challenges



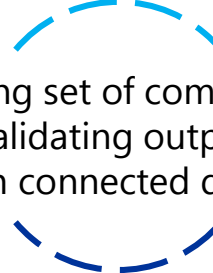
Ensuring API endpoints are up, fast and returning the data as expected



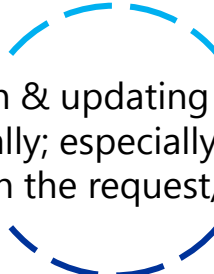
Testing components in isolation as well as in combination with different systems



Inability to run API regression tests quickly to maintain the Agile & DevOps cycle



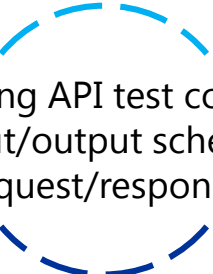
Verifying set of complex API calls & validating output against each connected device



Maintain & updating test case manually; especially during change in the request/response



Sequencing and maintaining API calls



Maximizing API test coverage - input/output schema (request/response)



Identifying, selecting and testing different parameter values

## So, how to confirm API-readiness & ensure continuous business connectivity?

*The answer lies in adopting **Test Automation** that meets modern-day API testing requirements...*

# Why Test Automation to Ensure API Readiness?

Accelerates  
Testing Process

Drives More  
Productivity &  
Agility

Ensures Quality  
Build & Output

Reduces Testing  
& Maintenance  
Costs

Simplifies API  
Integration &  
Regression  
Testing

Expands Testing  
Coverage

Caters Broader  
Range of Test  
Conditions

Yields Efficient  
And Effective  
Test Results

Covers Larger  
Number of Test  
Cases & Test  
Cycles

Leverages  
Sophisticated  
Business-driven  
Test Scenarios

# Best Practices of API Test Automation (AGENDA)



- Defining robust API testing strategy against realistic network condition, environment, and bandwidth.
- Checking API performance and scalability within private as well as public servers for performing business-critical transactions.
- Validating API response time & monitoring API interaction with connected tools, applications and backend systems.
- Ensuring API messaging quality over JSON & XML throughout design, development and integration stages.
- Running automated API regression testing via continuous integration systems.



# Defining robust API testing strategy against realistic network condition, environment, and bandwidth

Define the objective & scope of API testing

Identify the type of network, environment & capacity to be utilized

Identify the purpose & functionality of API in the existing system

Set-up API test automation workflow

Create API test specification and design document considering API workflow

## Checking API performance and scalability within private as well as public servers for performing business-critical transactions

Set-up API test automation environment with the required set of parameters

Understand the type of server to be utilized and configure API with server

Define test scenarios & create test cases by identifying individual & group API operations

Constantly monitor API availability within private as well as outside firewall

## Validating API response time & monitoring API interaction with connected tools, applications and backend systems

Identify & connect API with required applications, systems & devices

Configure API with application database & network

Perform API mocking for functional, non-functional, integration & external components

Employ API virtualization to test API behavior with connected database

Change system settings and configurations to test API behavior in runtime

# Ensuring API messaging quality over JSON & XML throughout design, development and integration stages



Identify input parameters & combination to verify quality of different API messages

Analyze different request/response patterns for JSON & XML as per different touchpoints

Sequence API calls as per workflow to check if the APIs produce useful results from successive calls

Test & verify API response time with connected systems

Set-up & implement CI server for automating API regression testing

Integrate API automation suite with CI server

Ensure continuous code commit, compilation and build integration

Perform regression unit & integration tests when code is committed

Automate build deployment and monitor tests progress

# Other API Test Automation Checklist

- ✓ Make sure your environment implementation is correct and works as specified in test documents.
- ✓ Set up Key Performance Indicators & Metrics to assess the test results against these KPIs.
- ✓ Implement the right test automation tool that meets your expectations.
- ✓ Consider API mocking during; 1) frequent data changes, 2) immature target APIs, 3) data errors, collisions & timeout, 4) unreliable networks & systems, etc.
- ✓ Create self-contained test cases, which are independent of dependencies.
- ✓ Club test cases that cover the most frequently called API functions to reduce rework.
- ✓ Engage in security testing to ascertain results in case of improper security rights.
- ✓ Review your API metrics from time-to-time to rule out errors and misinterpretations if any.

Thank You!

Questions?

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