Can You Trust Your APIs?

IBM

Rewriting business digitally

We are in the era of a technological revolution that is fundamentally altering the way we live and interact with each other. This digital disruption is happening at an unprecedented rate. Scale and volume of this impact are monumental, sparing no industry. The world economic forum has rightly called this age of digital transformation as the “Fourth Industrial Revolution”.

APIs are the driving force for this digital innovation. Their emergence has unlocked the potential to exchange information faster and easier than was historically possible. They are increasingly used to integrate disparate data sources and unlock untapped opportunities giving rise to new business models.

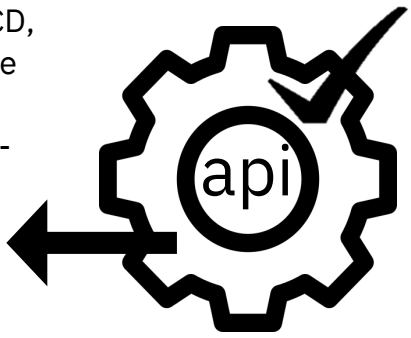
APIs are the central nervous system that binds your core platform to your mobile app, website, and the rest of the world. The onus now shifts on enterprises to ensure the API behavior is intact, as it has a far-reaching effect on the app’s execution and end-user experience. Testing APIs continuously can no longer be ignored.

Shifting Left Matters

How does one keep up with the pace of this transformation? Enterprises are embracing automation in development and deployment for faster time to market. To be successful in this disruptive climate, it is not only important to release software applications but also ship updates to stay ahead of the competition and ensure customer loyalty.

This rapid transformation is putting tremendous pressure on organizations to stay nimble. This, in turn, has led them to adopt continuous integration and continuous deployment (CI/CD).

Though enterprises have invested in tools around CI/CD, testing remains primarily manual. Although teams have improved the speed of delivery, quality has taken a backseat. Manual testing is often insufficient and time-consuming particularly when validating growing codebases.



Being a customer-obsessed firm means delivering at high speed without compromising quality. The first step towards achieving high quality is to start testing sooner in the development lifecycle with a Shift Left strategy. This strategy must include automation and streamlining of testing to deliver at the speed the business expects.

Ace your tests

A modern app is typically powered by more than half-dozen APIs and often includes third-party APIs too. To ensure the app functions as expected your testing strategy should be comprehensive. It should include but not be limited to the unit, functional, integration, and security testing. Also, the goals and the stakeholders are different for each of these test strategies.

Addressing these wide ranges of testing permutations makes API testing arduous. But an effective strategy and automation will accelerate in consistently building high-quality APIs.

Let us use an example to walk-through the API testing requirements and personas involved. To illustrate this, let's imagine your team is building out an app called "BabyYodaSpeaks" for Star Wars fans.

API / APP Developer

BabyYodaSpeaks requires multiple APIs to provide a delightful experience to users. Based on the contract, let us assume that each developer is responsible for the development of a single API. For code quality, typically the developer writes manual test cases and has to update these tests for every code iteration and ensure they adhere to the contract. As this is time-consuming, manual updates to tests become a bottleneck and start trailing behind code, resulting in poor quality.

Getting to WOW:

1] Automatic test generation based on the API contract: Generation of test and assertions automatically based on the API Contract ensures complete test coverage. This removes the manual overhead and accelerates code delivery.

2] Continuous testing for iterative development: For iterative development, ensure the code behaves as defined in the contract through continuous testing. This frees up the development time to manually check if the new code updates are working as defined.

Quality Assurance Champions

A Quality Assurance Champion's primary focus is to ensure the App is functioning as designed. This requires not only testing individual APIs but also sequencing multiple APIs together where the output of one is the input to another, adding logical constructs

for conditional testing, etc. This often translates into writing tests in code and requires QA testers to have development experience. Also due to the manual creation and maintenance of test cases, the QA team struggles to be current in a high-speed iterative development.

Getting to WOW:

1] No-code API test creation: Ability to visually create and update tests without having coding expertise

2] Simplifying integration tests: API sequencing, logical constructs, and multiple data sets to run against, all of this without any code

3] Gain insights on code quality: Analyze test results through a dashboard, and generate reports to improve test coverage

First Responders- Operations Team (Ops)

BabyYodaSpeaks is live and is one of the most downloaded apps from the app store! Now the operations team must ensure the APIs powering the app are available, performing, and functioning correctly. But often the Ops team lacks functional knowledge of the APIs and they end up monitoring the API with simple ping and health checks. Simple pings are shallow tests and not sufficient. They miss out in identifying underlying API problems. Also, since the testing and monitoring platform are different, the Ops team is unable to leverage the test cases developed by the developers or the QA Team

Getting to WOW:

1] Write intelligent test and monitoring scenarios: Avoid writing test cases from scratch, and have the access to enhance and reuse existing test cases

2] Be the First to Know: Schedule tests, get alerts in case of any failure or anomaly in API behavior.

3] Performance insights: Analyze API performance trends to prepare for future API workloads

Trust your API

Is the API developed as per the contract?

Are the APIs delivering the functionality expected by the App?

Is the API up, behaving and performing?

The underlying theme across all of these is the ability to **Trust your API**

The availability of API Connect Test and Monitor has simplified API testing and monitoring to ensure you consistently build high-quality APIs so that you can trust your API across the lifecycle.

API Testing for API/App Developers

1. Automatic Test Generation: API Connect Test & Monitor can automatically generate tests from your API contract (Open API definition). If you do not have an OpenAPI definition, fret not! It can automatically generate tests from data on the wire.
2. API Behavior Validation: These tests go beyond the simple API invocation and validate the behavior of API through assertions.
3. CI/CD Integration: These tests can be included in the CI/CD pipeline to ensure the API is behaving as expected as developers iterate rapidly.

API Testing for QA Team

1. No code test creation: Create tests with drag and drop user experience accelerating testing
2. Testing at speed: Sequence, build conditional test cases through pre-built widgets.
3. API health check: Analyze test runs through dashboards and reports, gain insights on failure and quality trends

API Monitoring for Ops Team

1. Collaboration: Enhance and reuse existing test cases by collaborating with the development and testing team

2. Proactive Monitoring: Synthetic global monitoring to check uptime and measure performance
3. Alerting: Get alerted on failures, analyze individual API metrics like latency, error codes, etc.

Get Started

IBM API Connect with automated testing application is the complete API testing platform that has simplified end to end testing with automation. The solution can be hosted in your own data centers or used on the cloud.

The primary focus is to accelerate building high quality APIs consistently and rapidly through automated test generation. It provides a seamless way for developers and QAs to work as a cohesive unit. Ultimately, Automated API Testing enables teams to produce powerful automated API tests and proactively monitor inconsistent behavior to achieve continuous reliability.

Ready to get started **for free**? Start your 30-day free trial here on API Connect SaaS on AWS and try it for yourself.

Build quality APIs faster

Collaborate and win as team

Proactively monitor APIs

To learn more, contact your IBM Business Partner:

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