



Can You Trust Your APIs?

Rewriting businesses 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. As enterprises are continuously expanding their digital footprint, they must ensure the API behavior is intact, as it has a far-reaching effect on the app's execution and end-user experience. An API, however phenomenal, can be rendered useless if it is not dependable. Behavior validation is essential to develop reliant APIs and build trust around their consumption.

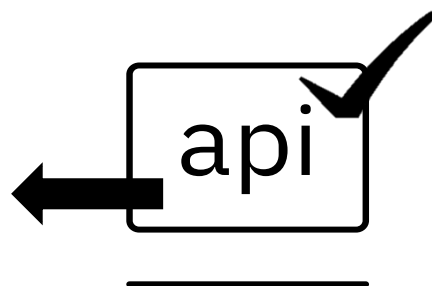
Now more than ever, the need to test APIs continuously can no longer be ignored.

Shifting left matters

To be successful in this disruptive climate, it is not only important to release software applications but also ship updates frequently to stay ahead of the competition and ensure customer loyalty. Enterprises are embracing automation in development and deployment for faster time to market in order to win, serve and retain customers.

This rapid transformation is putting tremendous pressure on organizations to stay nimble. In turn, this 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. As organizations shift left, they increase the degree of trust through every stage of the development cycle.

Excelling at 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) unit, functional, integration, and security testing. Also, the goals and the stakeholders are different for each of these test strategies.

Addressing these numerous 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, the developer typically writes manual test cases and has to update them for every code iteration to 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.



Enhancing the developer's experience

The following capabilities will greatly accelerate the developer's productivity in consistently building high-quality APIs.

- Automatic test generation based on the API contract
The automatic generation of tests and assertions based on the API contract ensures complete test coverage. It accelerates the delivery of code by removing the manual overhead.
- 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 spent 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.



Enhancing the quality assurance champion's experience

The following features can significantly benefit the quality assurance champions to test continuously.

- No-code API test creation
Ability to visually create and update tests without having coding expertise.
- Simplifying integration tests
API sequencing, logical constructs, and multiple data sets to run against, all of this without any code.
- 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 ends up monitoring the API with simple ping and health checks. Simple pings are shallow tests and inadequate. They miss out on identifying underlying API problems in the app/service. Also, since the testing and monitoring platform is different, the Ops team is unable to leverage the test cases developed by the developers or the QA team.



Enhancing the operation team's experience

The following capabilities will help the operations team to continuously monitor APIs performance and behavior in production environment to provide great visibility to the success of the operations.

- Write intelligent test and monitoring scenarios
Avoid writing test cases from scratch and have access to enhance and reuse existing test cases.
- Be the First to Know
Schedule tests, get alerts in case of any failure or anomaly in API behavior.
- 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 running, behaving and performing?

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

IBM API Connect now includes API testing and monitoring capabilities. It ensures you consistently build high-quality APIs so that you can trust your API across its lifecycle.

API Testing for API/App Developers

- Automatic Test Generation
Automatically generate tests from your API contract (OpenAPI definition). If you do not have an OpenAPI definition, fret not! It can automatically generate tests from data on the wire.
- API Behavior Validation
These tests go beyond the simple API invocation and validate the behavior of API through assertions.
- 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

- No code test creation
create tests with drag and drop user experience accelerating testing
- Testing at speed
sequence API calls and build conditional test cases through pre-built widgets.
- API health check
analyze test runs through dashboards and reports, gain insights on failures and quality trends.

API Testing for Ops Team

- Collaboration
reuse and enhance existing test cases by collaborating with the development and testing teams
- Proactive Monitoring
synthetic global monitoring to check uptime and measure performance
- Alerting
get alerted on failures, analyze individual API metrics like latency, error codes etc.

These new capabilities within IBM API Connect simplify end to end testing with automated test generation. The solution can be hosted in your own data centers or used on the cloud.

Get started

The primary focus is to accelerate building high quality APIs consistently that are dependable and trustworthy. Ultimately, IBM API Connect enables firms to lower the costs to continuously test APIs and proactively monitor them to achieve continuous reliability.

Ready to get started **for free**? Visit this link to make your API testing heaps easier - <https://ibm.biz/apitest>

Build high- quality
APIs faster

Collaborate and
win as a team

Proactively
monitor APIs

About the author



Swetha Sridharan is a product manager at IBM API Connect. She works with customers to understand how API testing and monitoring can be seamlessly integrated into their API lifecycle to build reliant APIs.

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