

# How to Create and Manage Comprehensive API Tests With RapidAPI Testing

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*With APIs taking center stage, testing them becomes even more imperative. API testing ensures that the APIs adhere to their interface & functional requirements. It also ensures that they integrate with applications seamlessly and meet all the usability expectations of API consumers.*

*How do you instill the best practices in API testing to ensure seamless interaction between the applications dependent on them?*

*This guide examines how to validate an API through testing, defines the various categories of testing from functional to monitoring and performance through usability testing, introduces RapidAPI testing and provides the necessary steps for conducting testing with RapidAPI.*

## What is API Testing?

Consider an individual API. Behind the scenes, it is split into a few components. The API interface defines the standard specification, including API endpoints, methods, request, and response data formats. The core business logic of the API resides within API internals. A few API backend elements, such as databases and third-party application servers, also support this component.

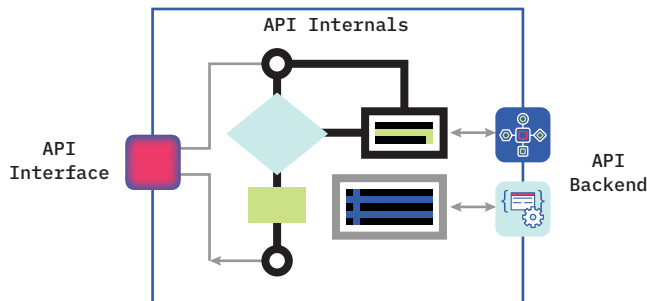
Unless specified otherwise, the field of API testing covers the API interface component.

API testing defines a set of steps to objectively verify the API interface so that all the API endpoints perform their desired functionality, adhering to a standard definition for the request/response data format, and protocol-specific parameters.

We can view API testing as including several categories.

# Categories of API Testing

## 1. Functional Testing



As the name suggests, functional testing verifies the actual functionality for which the API was designed. Functional testing has several facets, such as:

- **Business logic:** Verification of the API’s adherence to business logic.
- **Data formats:** Verification of the request and response format meeting the contract between the API consumer and the API.

## 2. Monitoring & Performance Testing

Non-functional testing ensures that the API behaves consistently under certain unusual conditions. These conditions exist in a real-world deployment where the API is exposed beyond the usual constraints depicted by time (frequency of triggering) and space (geographical distribution).

- **Performance:** Performance testing validates the API’s execution performance under slow and fast triggering conditions. It also ensures that the API response time does not drift over a period of time with continuous operation.
- **Reliability:** Reliability testing ensures that the API is always available and is supported by the redundant infrastructure to take care of outages or degradation in performance.
- **Consistency:** Consistency is about the predictability of the API. Testing for consistency ensures that under no circumstances, the API deviates from its intended functionality.
- **Load:** Load testing validates the APIs capability in handling the surge in traffic due to increasing demand from the client applications.

## 3. Security Testing

APIs are also exposed to the same kind of cyber-attacks faced by any computer connected to the internet. Therefore security testing is a must to detect any attacks on the API backend infrastructure. Security testing involves checking for:

- **Access privileges:** APIs must implement a robust authentication and authorization mechanism to grant controlled access to the API endpoints based on a user profile.
- **Compliance:** APIs must comply with the prevailing compliance standards, either as part of the best practices or mandated by laws. Examples include SOC, ISO 27001, and GDPR.
- **Injection Attacks:** APIs must guard against injection attacks that allow hackers to inject corrupted data or plant malware directly through API invocation.
- **Flooding:** API backend must detect and thwart any form of denial of service attacks that may severely hamper the API performance.

## 4. Usability Testing

APIs act as a middleware layer for the client application. Usability testing is conducted to ensure that the API functions within the constraints defined by the client application. Some of the aspects of usability testing include:

- **Scenario Validation:** APIs must exhibit correct functionality when invoked as part of a client application. This process involves executing the API in a specific sequence as per the user story and getting the right outcome.
- **Developer Experience:** The API consumer is a developer who is building the client application by leveraging the APIs functionality. Therefore, the API interface must be easy for the developer to understand. Testing for developer experience involves a subjective assessment of the API’s intuitiveness, simplicity, and consistency of request and response formats.

## What is RapidAPI Testing?

**RapidAPI Testing** is a cloud-based API testing solution that enables enterprises to create and manage comprehensive API tests from development through deployment. RapidAPI Testing is available as a self-service option for as an integrated component of the RapidAPI marketplace or RapidAPI Enterprise Hub. It supports all the popular architectures of API interfaces, including REST, SOAP, and GraphQL. It offers an intuitive user interface that simplifies testing, monitoring, management, and API integration across the development lifecycle.

The best part about RapidAPI Testing is that it seamlessly integrates with RapidAPI's API Marketplace and Enterprise Hub. RapidAPI's API Marketplace is the world's largest API marketplace, used by over 2 million developers to find, test, and connect to thousands of APIs — all with a single account, API key, and SDK. The RapidAPI Marketplace is also available for enterprises as RapidAPI Enterprise Hub — a white-labeled and branded version of the marketplace used by leading organizations.

RapidAPI Testing is available as an add-on to RapidAPI Enterprise Hub or as a standalone subscription.

# How To Perform API Testing with RapidAPI Testing

Ready to build an API test scenario with RapidAPI testing?

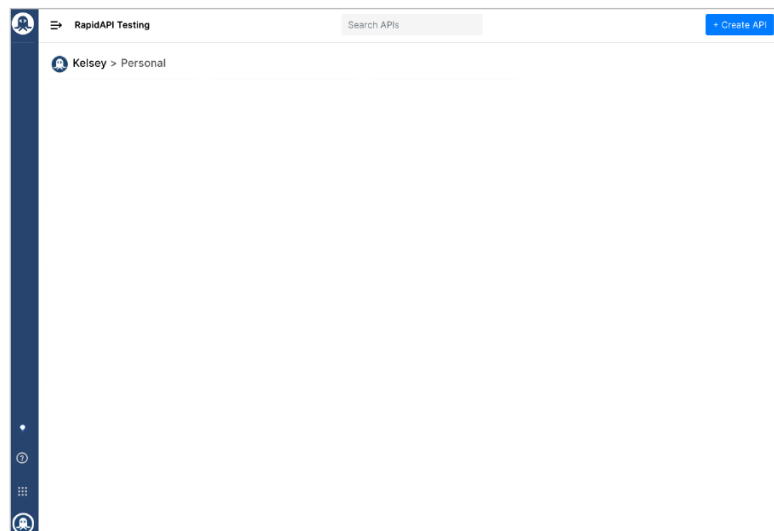
Follow along with the steps below and experience the ease of testing an API right from your browser.

## Step 1: Sign up for a free RapidAPI Account

To begin using RapidAPI Testing, if you do not have an account on the RapidAPI marketplace, you'll first need to sign up for a free RapidAPI developer account on the marketplace or you can go directly to the [RapidAPI testing site](https://rapidapi.com/testing/). With this account, you also get a universal API Key to access all APIs hosted on the RapidAPI's API marketplace.

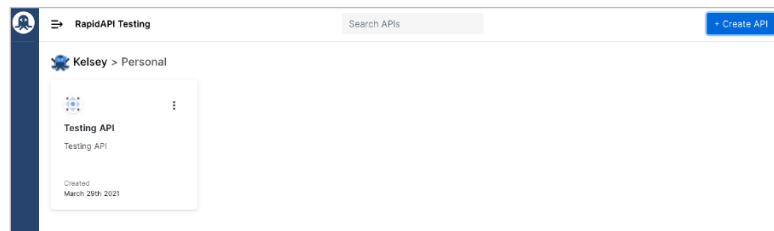
## Step 2: Log on to RapidAPI Testing

Point your browser to <https://rapidapi.com/testing/> to log on to the RapidAPI Testing console. Once logged in, you should see a blank console.

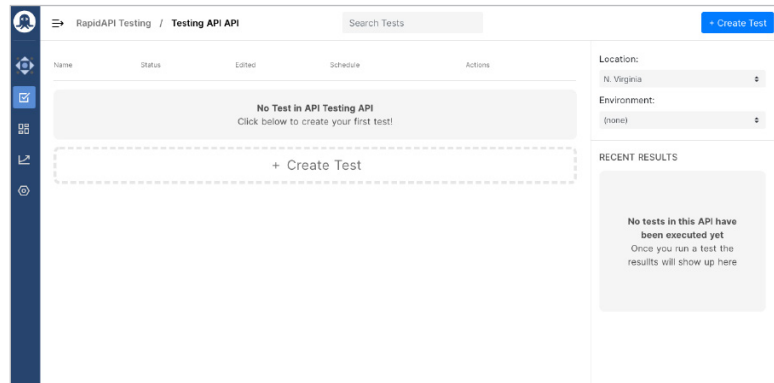


## Step 3: Add a new API

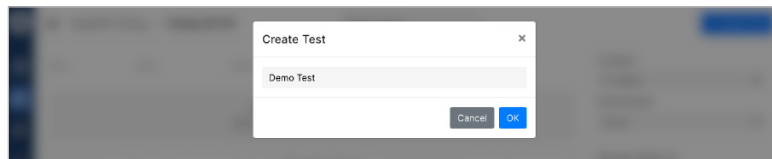
Click on the “Add API” to add a new API. You will be prompted to provide a name. Type “Testing API”, and then you should see the new API added to your account.



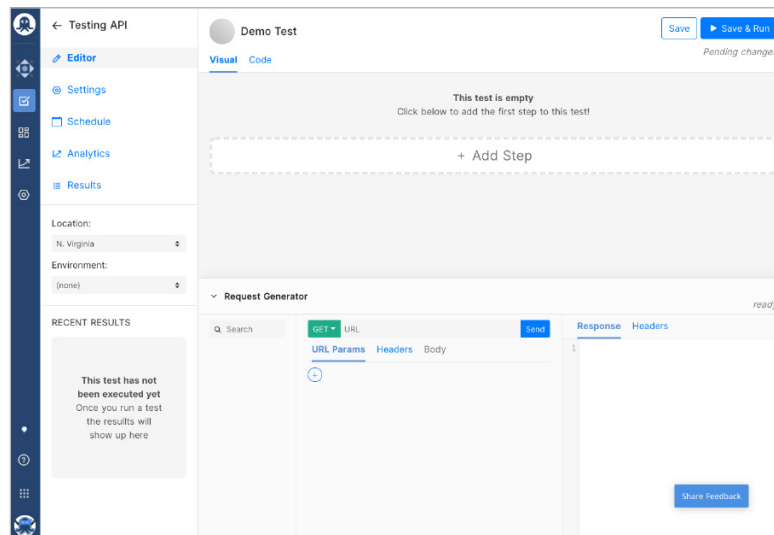
## Step 4: Add a new test



The newly created “Testing API” is your container for adding API test cases. Click on it to see the test screen. Initially, this will be empty as we are yet to add any tests.



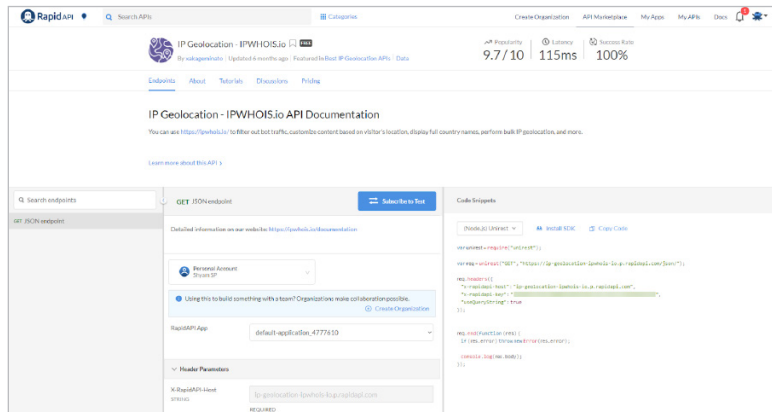
Click on “Create Test” to create a new test case named Demo Test.



Now the RapidAPI Testing app will switch to the design view for Demo Test.

## Step 5: Add the test steps

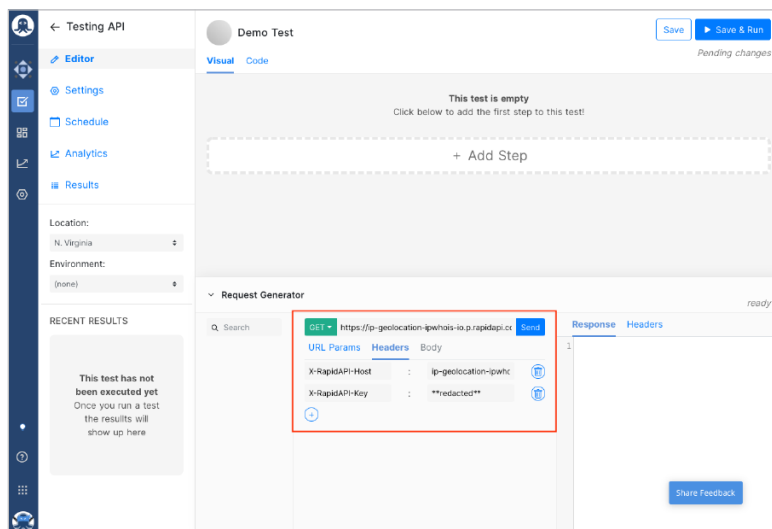
Now it's time to add test verification steps for an API. For this test, we are going to add the steps for verifying the **IP Geolocation API**.



Before proceeding, ensure that you access the API console of IP Geolocation API and subscribe to the Basic plan for accessing the API.

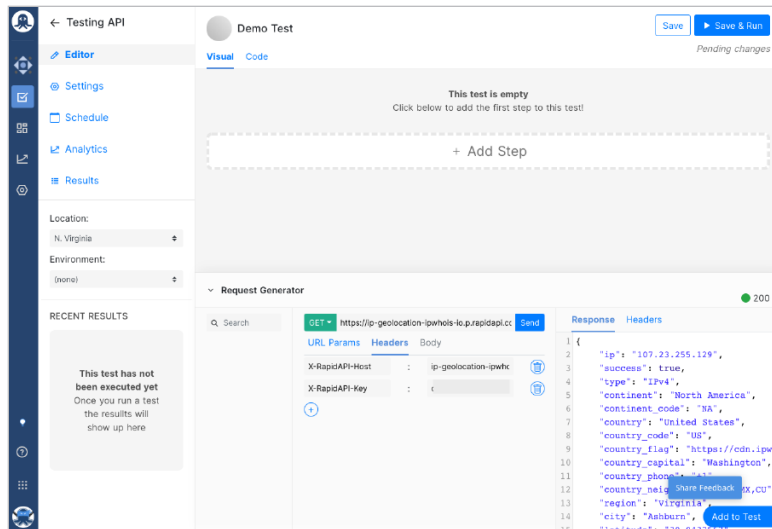
The API console's code snippet also contains the URL along with the two HTTP headers, `x-rapidapi-host` and `x-rapidapi-key`. Make a note of these three parameters.

Back to the RapidAPI Testing, click on the open link on the right bottom corner of the page to create an API call. This link pops open an API request generator, which you have to populate with the parameters of IP Geolocation API.

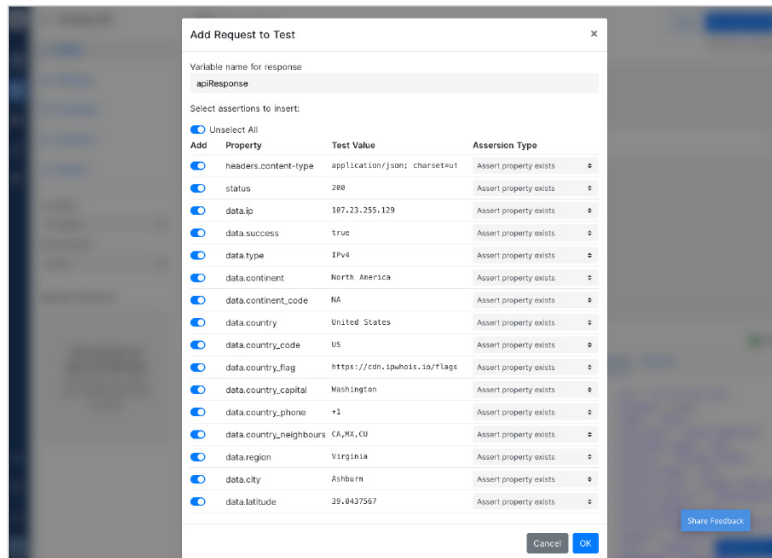


Upon clicking the “Send” button, you should see the API response. Along with that, you will also get an option to add this test to the Demo Test.

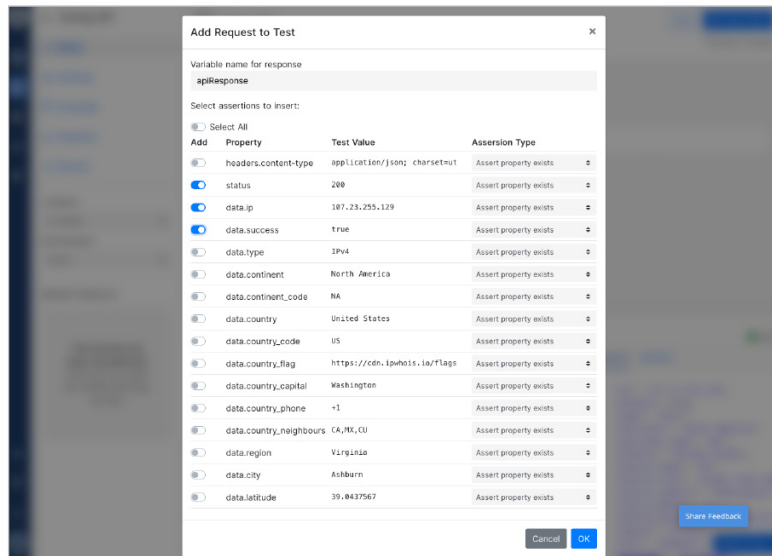




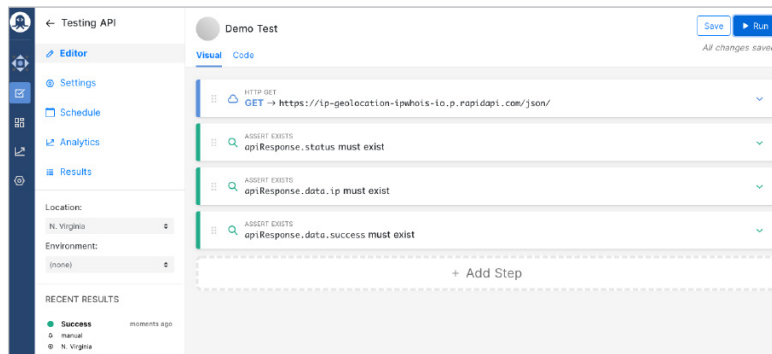
Clicking on the button “Add to Test” at the right bottom corner will open up a list of assertions for all the API response properties.



It is up to you whether you want to test for all the API response parameters. However, to keep things simple, let's select only the status, data . ip, and data . success property of the API response.

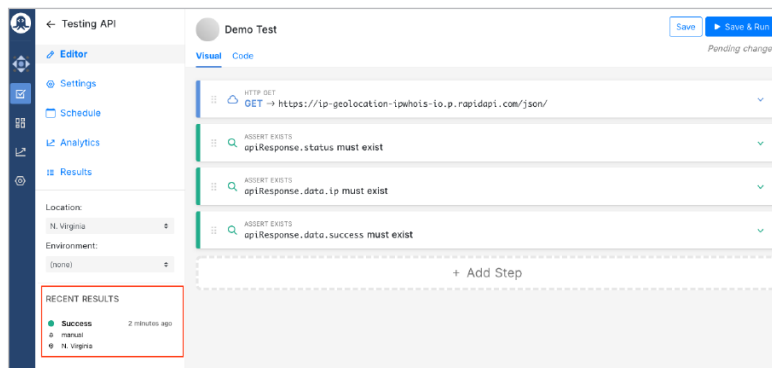


Upon selecting these parameters and clicking Ok, you will see the Demo Test getting populated with these assertions as individual test verification steps.



## Step 6: Run the test

It's time now to run the test scenario for the Demo Test. Click the Save & Run button on the top right corner. RapidAPI Testing will run the Demo Test case in the background. Within a few seconds, you will have the result.



## Voila!

You have successfully executed an API test case using RapidAPI Testing.

As the next steps, you can add more test cases alongside Demo Test to verify other API parameters. Alternatively, you can update the DemoTest to add more test steps as additional verifications.

## Conclusion

In addition to running standard tests, RapidAPI Testing lets you schedule automated testing sessions. You can integrate it with CI/CD pipelines within your API development processes. It also gives you access to a complete analytics dashboard of your past test sessions as well as the API's performance under test. All these features make RapidAPI Testing a comprehensive API testing platform.

We encourage you to [sign up and try RapidAPI testing](#) to experience the ease of deploying API test cases from anywhere in the world.