

# **An Empirical study on Ready APIs a Testing Tool**

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## **Abstract**

**Software Testing Lifecycle is an essential stage in a product development. Testing is an key part of product development, to guarantee quality of the application/product. Software testing helps to improve the quality, reliability and performance of the system. Several testing techniques are used as per the requirements of the application usage. Automated Testing is a technique where the Tester writes scripts on their own and uses suitable Software or Automation Tool to test the software. It is an Automation Process of a Manual Process. It allows for executing repetitive tasks by reducing the intervention of a Manual Tester. Automation testing aims to enhance testing efficiency, precision, and speed. It automates repetitive manual testing tasks, allowing faster and more accurate results. Utilizing automated testing tools allows software applications to be tested swiftly and effectively, ensuring consistent performance and quality. Lack of proper testing leads to fewer quality products, delayed delivery, unsatisfied custom service, and increased costs.**

**Keywords: Testing, Automation Testing, Performance Testing, Ready API**

## **Introduction:**

Technologies are always evolving, allowing firms to enhance the websites and business apps more competitive. Relying on the automation testing will be easy to keep up the better-quality products in agile development. There are several advantages to testing automation that assist firms in delivering high-quality goods or services. It also saves money, prevents delays, and contributes to a positive client experience. Unplanned test management might result in all these disparities and difficulties, which will have a direct impact on business deliverables.

Tool selection is one of important task before going for automation and should satisfy a long term requirement with a border vision. First, Identify the requirements, explore various tools and its capabilities and supporting protocols and domain, set the expectation from the tool and go for a Proof Of Concept.

## **How to Choose an Automation Tool?**

Following criterion will help you select the best tool for your requirement-

- Environment domain/ protocol Support
- Testing of Database with ability to integrate external data source
- Object identification

- Scripting Language Used
- Support for various types of test – including functional, performance, mobile, etc...
- Support for multiple testing frameworks
- Easy to debug the automation software scripts
- Extensive test reports and results
- Integration of external monitoring tools
- Supporting CI/CD integration

## Ready API:

ReadyAPI is a tool that allows teams to create, manage, and execute automated functional, security, performance tests and service virtualization in one centralized interface. It is a REST and SOAP API functional testing tool that enables software developers, QA engineers and manual testers to work together to create, maintain, and execute complex end-to-end API tests in their CI/CD pipelines.

## API:

An API is a set of definitions and protocols for building and integrating application software. API stands for **application programming interface**. APIs let your product or service communicate with other products and services without having to know how they're implemented.

## How an API works:

1. **A client application initiates an API call** to retrieve information—also known as a *request*. This request is processed from an application to the web server via the API's Uniform Resource Identifier (URI) and includes a request verb, headers, and sometimes, a request body.
2. **After receiving a valid request**, the API makes a call to the external program or web server.
3. **The server sends a response** to the API with the requested information.
4. **The API transfers the data** to the initial requesting application.

## Types of API protocols

- **SOAP** (Simple Object Access Protocol) is an API protocol built with XML, enabling users to send and receive data through SMTP and HTTP. With SOAP APIs, it is easier to share information between apps or software components that are running in different environments or written in different languages.
- **XML-RPC** is a protocol that relies on a specific format of XML to transfer data, whereas SOAP uses a proprietary XML format. XML-RPC is older than SOAP, but much simpler, and relatively lightweight in that it uses minimum bandwidth.

- **JSON-RPC** is a protocol similar to XML-RPC, as they are both remote procedure calls (RPCs), but this one uses JSON instead of XML format to transfer data. Both protocols are simple. While calls may contain multiple parameters, they only expect one result.
- **REST** (Representational State Transfer) is a set of web API architecture principles, the interface must adhere to certain architectural constraints. It's possible to build RESTful APIs with SOAP protocols, but the two standards are usually viewed as competing specifications.

### **Key benefits of ReadyAPI include:**

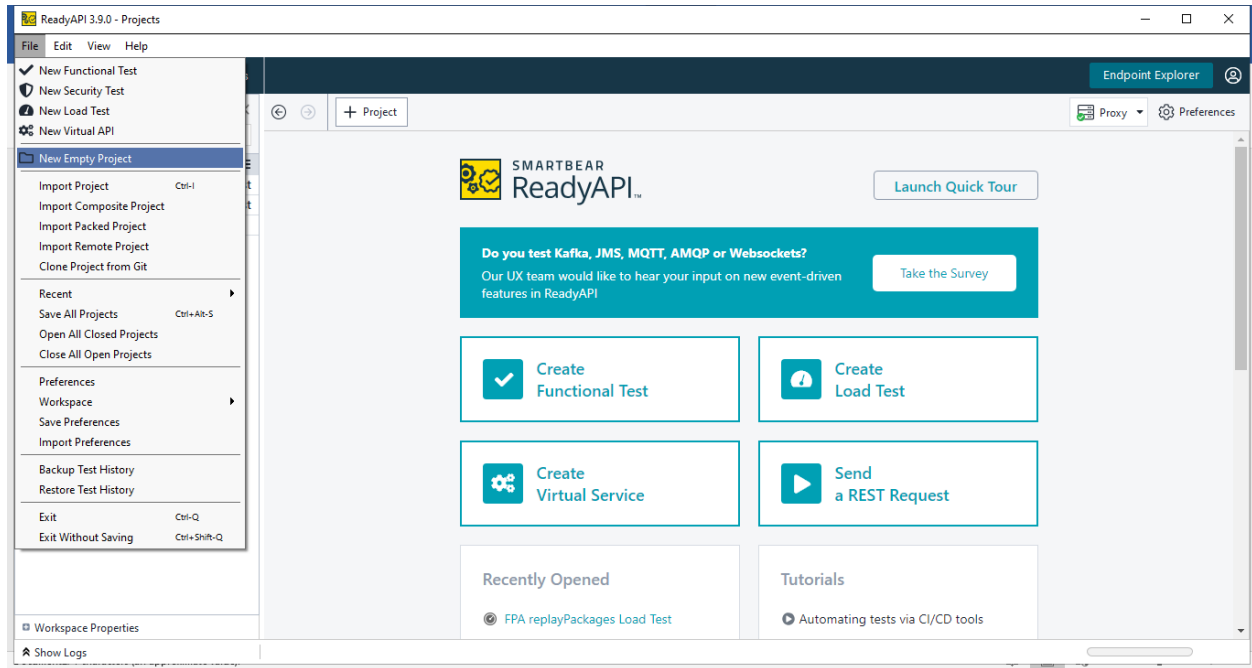
- Supports functional, security, performance tests and service virtualization API testing
- REST, SOAP, & Apache Kafka APIs, JMS, JDBC, and other web services
- Easy and flexible test creation and execution
- Continuous testing of APIs in your CI process
- Collaboration as a team
- Data-centered focus
- Support for multiple specifications, schemas, and protocols
- Multiple capabilities in one platform
- Comprehensive testing for REST, GraphQL, SOAP, JMS, and JDBC services
- Integration with popular DevOps tools
- Effective load management
- Support for databases
- Seamless integration into CI/CD pipelines

### **Ready API features and capabilities:**

APIs and Microservices are transforming the way organizations do business in the digital world, and testing them is becoming more critical than ever. ReadyAPI gives development and testing teams a powerful solution to create, run, and analyze complex tests on REST, SOAP, & Apache Kafka APIs, JMS, JDBC, and other web services.

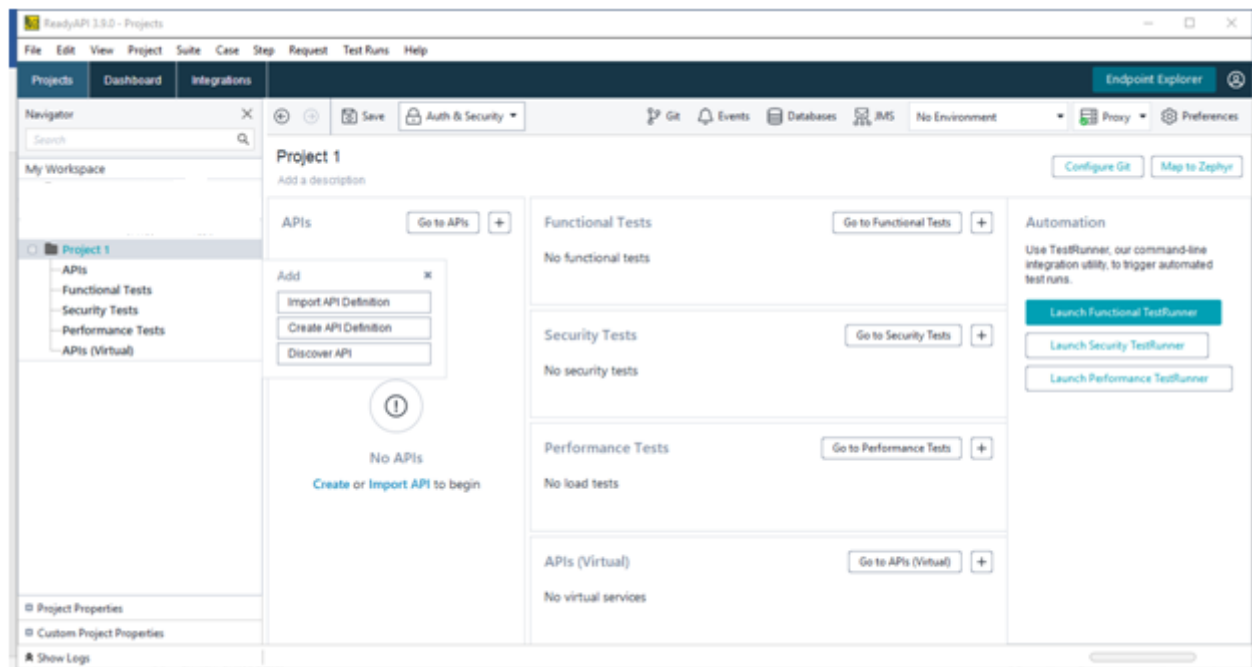
### **Built for end-to-end testing of your entire back-end**

Create comprehensive end-to-end tests that validate the entire workflow of your APIs from an API definition or endpoints. Pass response data and add assertions with just a few clicks - no coding required.



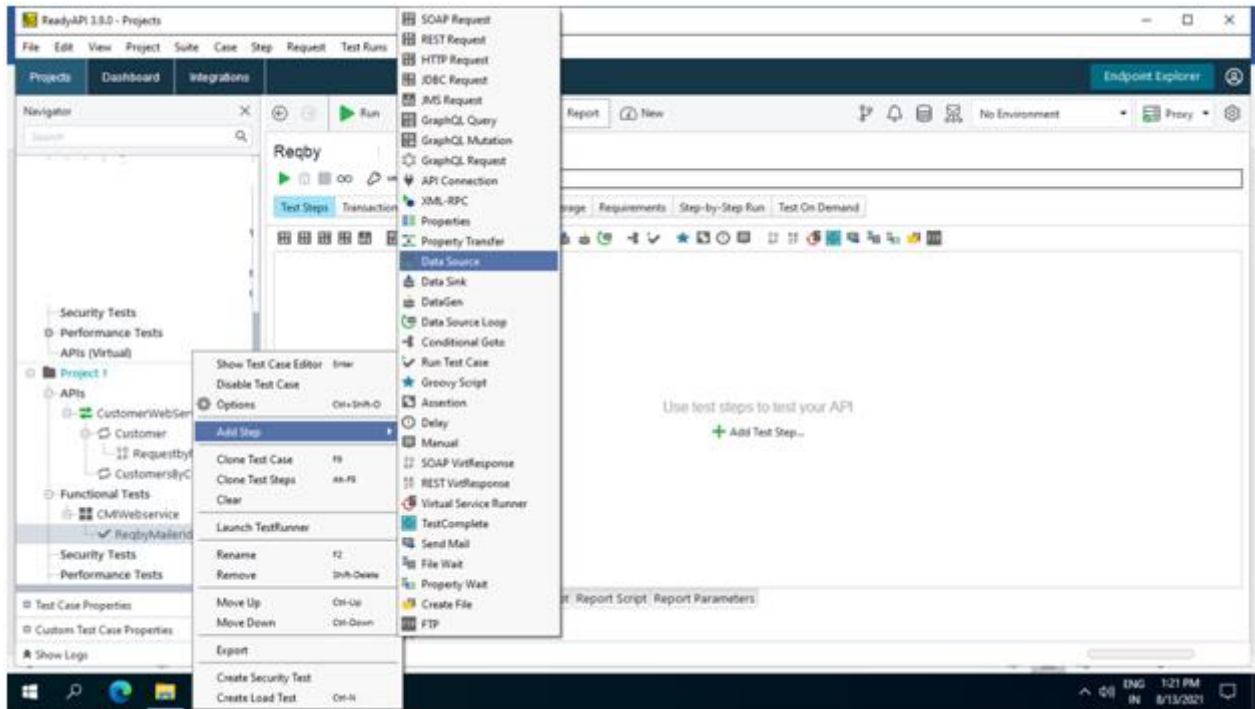
## User-Friendly Interface

ReadyAPI offers a user-friendly interface that makes it easy to create, manage, and execute API tests. Its intuitive drag-and-drop functionality allows users to quickly build test cases and test suites without the need for extensive coding knowledge.



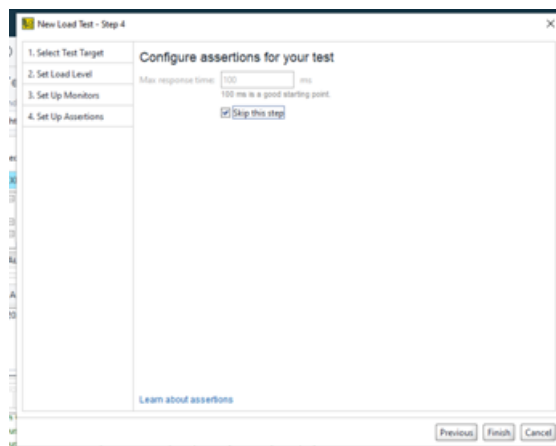
## Data-Driven Testing

ReadyAPI supports data-driven testing, allowing you to use external data sources such as spreadsheets, databases, and CSV files to drive your API tests. This enables you to test your APIs with a variety of data sets and scenarios, enhancing test coverage.



## Assertions and Validations

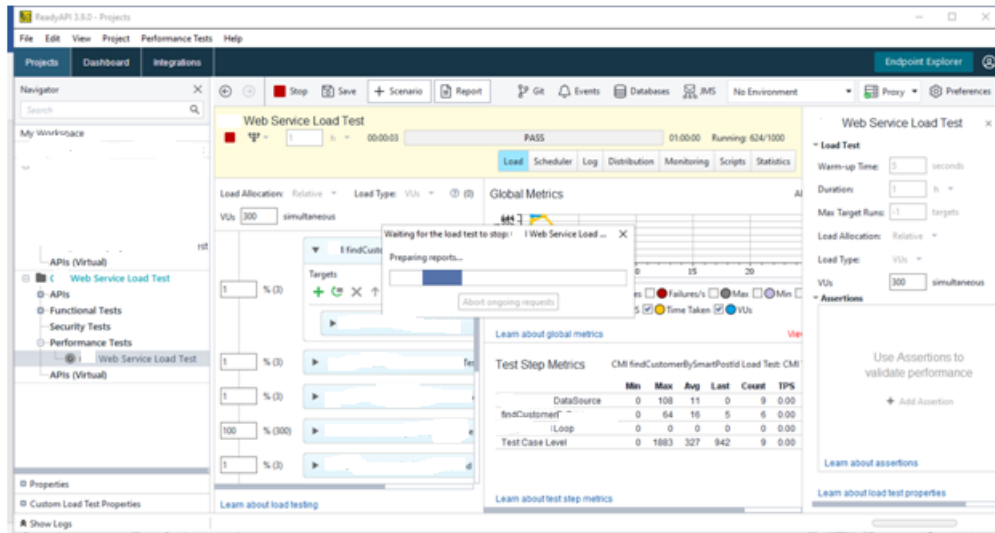
ReadyAPI offers a wide range of built-in assertions and validations to verify the correctness of API responses. You can validate response codes, perform JSON and XML assertions, check schema compliance, and create custom assertions to suit your specific testing needs.



## Test Execution and Reporting

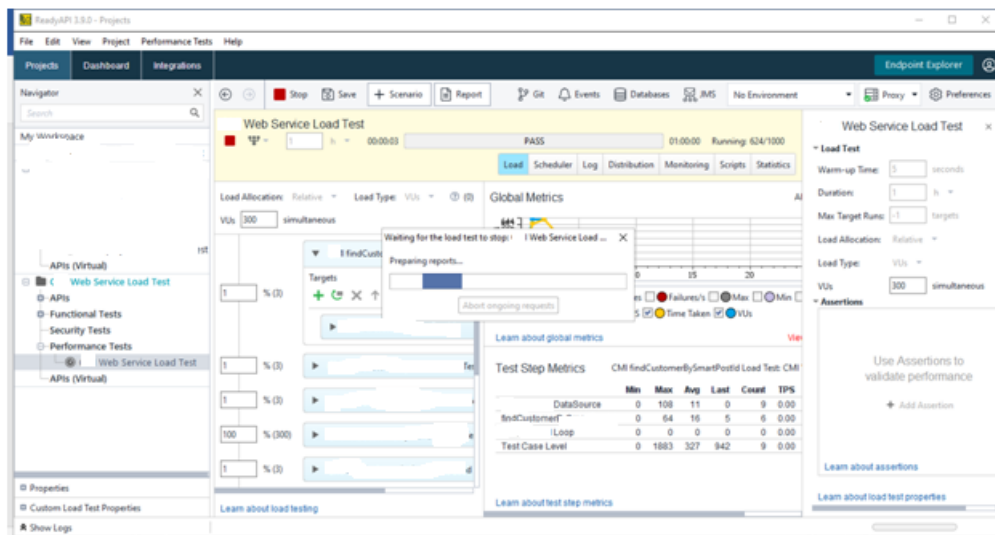
ReadyAPI generates comprehensive test reports that provide a detailed overview of the test execution results. These reports can be customized and exported in various formats, making it convenient to share

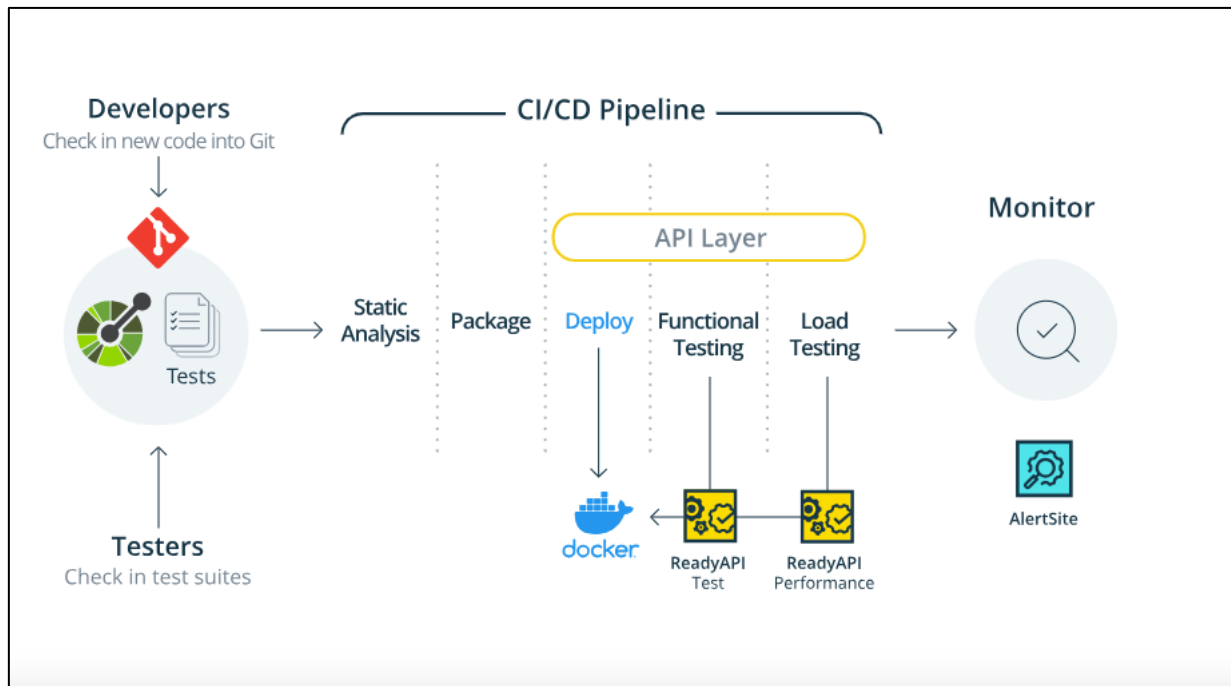
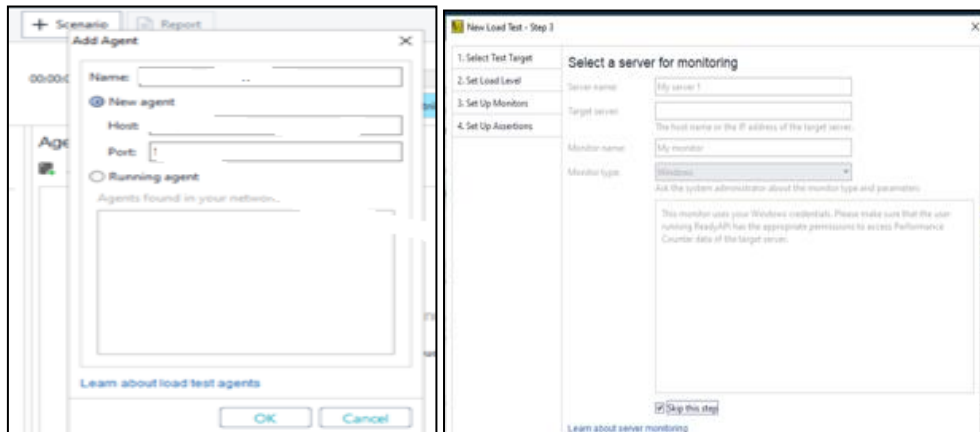
them with stakeholders. The reports help in tracking the status of tests, identifying issues, and providing documentation for audit purposes.



## Load Testing:

Ready API has the feature for Load testing, volume, endurance and stress testing of the API performance like real world conditions. We can add the agents to perform the load test. Ready API has the ability to measure the server performance by adding the server details.





## Virtualizing critical APIs:

As the business is depending on external vendors for most critical functionalities like payment, pre authorization etc and limitations on the external vendor environments on the capacity and usage restrictions Service Virtualization is a real aid. Virtualizing critical APIs and microservices can drastically help reduce dependencies and delays during the delivery pipeline. ReadyAPI supports virtualization of HTTP, REST, SOAP, JMS and JDBC protocols allowing for:

- creation of test suites before the service is built or implemented
- increase in availability of systems and databases for testing
- performance testing of third-party services and APIs

- building more realistic tests and error handling

Reduce unavailability in your microservices, containers, & 3rd-party APIs

Don't let unavailable web services slow down your development or testing workflow. Generate your virtual service with ReadyAPI, then start writing production ready integrations, performance tests, or functional tests - even if the web service is not ready or unavailable. Reduce bottlenecks in your microservice architecture by virtualizing your entire service layer

- Overcome rate limits and overage charges in 3rd-Party APIs
- Decouple your own process from unavailable internal databases or services
- Quickly isolate poor performance during integration and load testing

## Conclusion:

In conclusion, this research aimed to evaluate the potential of ReadyAPI as testing tool in of APIs. ReadyAPI offers features for functional, performance, security and service virtualization. real-time monitoring, and automated workflows, as a valuable tool for developers and testers.

The tool needs more enhancement and capability to support huge volume of load test as we have experienced restart of the tool during load test. Future research could explore the integration of ReadyAPI with other testing tools, project management and monitoring tools. Overall, this research contributes to a better understanding of the capabilities and limitations of ReadyAPI.

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