14 Open Source API Testing Tools For REST & SOAP Services

As we move towards more [Agile](https://www.joecolantonio.com/2016/12/19/test-automation-in-agile/) shift-left software development processes like continuous integration and delivery, the need to quickly give test feedback to our developers is increasing.

One downfall to UI tests is they are slow, making them a poor choice for letting developers know quickly if their code has broken the latest build or not. API tests, on the other hand, tend to be faster and run more reliably than GUI tests.

Before we take a closer look at the *api testing tools*, let’s make sure we’re all on the same page with what an API actually is.

**What is an API?**

Application Programming Interfaces (API) is a specification that acts as an interface for software components.

While most functional testing involves testing a user interface like a web page or a dot net form, [API testing](https://www.joecolantonio.com/2014/09/23/the-gui-is-no-longer-king-why-api-testing-is-important/) involves bypassing a user interface and communicating directly with an application by making calls to its APIs.

[](http://bit.ly/2lntavG)

API testing allows you to test headless technologies like JMS HTTP, databases and Web services.

API testing is sometimes called “headless” testing. Most headless testing consists of bypassing the UI and sending a request directly to an application's backend or service and receiving a response, while validating the response to ensure things are working as we expect them to.

This simple example is often referred to as a client/server relationship. A client makes a request by asking for a resource; the request then goes out and finds a server that can fill that request. The server locates the desired resource and sends a response back to the client.

**What API Testing Tools Can I Use to Automate API Testing?**

Since [Selenium](https://www.joecolantonio.com/2017/02/21/can-use-selenium-api-testing/) is just for browser based testing, you may be wondering which tool to use for Rest and Soap web service-based testing.

Here are some of the top API testing tools that can be used for Rest and Soap Web Service Testing.

**Postman [Mail](https://www.joecolantonio.com/2017/05/16/12-open-source-api-testing-tools-rest-soap-services/envelope/)**

[Postman](https://www.getpostman.com/) is a rest client that started off as a Chrome browser plugin but recently came out with native versions for both Mac and Windows.

At a high level, you can use it to send a post request to your web server and it gives you the response back. It allows you to set up all the headers and cookies your API expects, and then check the response when it comes back.

* Can be used for both automated and exploratory testing
* Can be run on Mac, Windows, Linux &Chrome Apps
* Has a bunch of integrations like support for Swagger & RAML formats
* Has Run, Test, Document and Monitoring Features
* Doesn’t require learning a new language

**Karate DSL [karate](https://www.joecolantonio.com/2017/05/16/12-open-source-api-testing-tools-rest-soap-services/007-karate-high-kick/)**

[Karate](https://github.com/intuit/karate) allows you to create a test that can sequence calls to any kind of web-service and assert that the responses are as expected.

* Build on top of Cucumber-JVM
* Can run test and generate reports like any standard Java project
* Test can be written without any Java knowledge required
* Tests are easy to write even for non-programmers

Check out a quick example on how to get started using [Karate with BDD](https://www.joecolantonio.com/2017/03/23/rest-test-tool-karate-api-testing/).

**SoapUI [soap](https://www.joecolantonio.com/2017/05/16/12-open-source-api-testing-tools-rest-soap-services/004-bubbles/)**

[SoapUI](https://www.soapui.org/)is a headless functional testing tool from SmartBear software. It comes in two flavors: Free open source version and Pro Version. Since the free version is open-source, you can actually gain access to the full source code and modify as needed. The pro version is user-friendlier, and has additional functionality including a form editor, an assertion wizard for Xpath, and SQL query builder.  The free version lets you:

* Can easily create custom code using Groovy
* Drag and Drop Test Creating
* Can create complex scenarios
* Asynchronous Testing
* SoapUI’s Mock Service lets you mimic web services before they are implemented

**HttpMaster Express [HTTP](https://www.joecolantonio.com/2017/05/16/12-open-source-api-testing-tools-rest-soap-services/http-2/)**

[HttpMaster](https://www.httpmaster.net/) describes itself as a web development and test tool to automate testing of web sites and services. It can be used to test RESTful web services and API applications. HttpMaster also allows you to and monitor API responses.

* HttpsMaster project offers global options to customize your API request
* Parameter capabilities enable you to include dynamic data with your request
* You can use request chaining to leverage request items to include some data from previous request with the next request

**Rest- Assured [rest](https://www.joecolantonio.com/2017/05/16/12-open-source-api-testing-tools-rest-soap-services/006-resting/)**

[Rest-Assured](http://rest-assured.io/) is an open-source Java Domain-specific language (DSL) that makes testing REST service simple. It simplifies things by eliminating the need to use boiler-plate code to test and validate complex responses. It also supports XML and JSON Request/Responses.

* Removes need to create boilerplate code required to interact with a rest service
* Support BDD Given/When/Then syntax
* Integrated seamlessly with Java projects

RestSharp [Sharp](https://www.joecolantonio.com/2017/05/16/12-open-source-api-testing-tools-rest-soap-services/005-sharp/)

[RestSharp](http://restsharp.org/) is a simple REST and HTTP API Client for .NET

* Supports .NET 3.5+, Silverlight 5, Windows Phone 8, Mono, MonoTouch, Mono for Android
* Easy installation using [NuGet](http://nuget.org/packages/RestSharp) for most .NET flavors
* GET, POST, PUT, PATCH, HEAD, OPTIONS, DELETE supported

**Rest Console [Console](https://www.joecolantonio.com/2017/05/16/12-open-source-api-testing-tools-rest-soap-services/monitor/)**

HTTP Client and Request Visualizer and Constructor tool, helps developers build, debug and test RESTful APIs. [Rest Console](https://github.com/ahmadnassri/restconsole) is a HTTP Request Visualizer and Constructor tool, helps developers build, debug and test RESTful APIs.

* Easy query parameters creation
* Syntax highlighting
* Authentication support: Plain, Basic, OAuth + Custom

**RoboHydra Server [ wAAACwAAAAAAQABAEACAkQBADs ](https://www.joecolantonio.com/2017/05/16/12-open-source-api-testing-tools-rest-soap-services/003-server/)**

[RoboHydra](http://robohydra.org/) is a testing tool for HTTP-based clients (ie. software that makes HTTP requests). The idea is, instead of connecting your clients-under-test to the real server, you connect them to RoboHydra and make RoboHydra respond with whatever you need for each request.

* You can test many different kinds of clients
* Written in Javascript, runs under Node

**Hippie-Swagger [Peace](https://www.joecolantonio.com/2017/05/16/12-open-source-api-testing-tools-rest-soap-services/hand-peace-o/)**

[hippie-swagger](https://github.com/CacheControl/hippie-swagger)is a tool for testing RESTful APIs. It’s also an API testing tool with automatic swagger assertions. In addition to validating API behavior, it will fail tests when swagger documentation is missing or inaccurate.

* Can validate All aspects of swagger file validated; parameters, request/response body, paths, etc.
* Accurate, human readable assertion messages

**WebInject [inject](https://www.joecolantonio.com/2017/05/16/12-open-source-api-testing-tools-rest-soap-services/002-injection-needle/)**

[WebInject](http://www.webinject.org/) is an open source solution for automated testing of web applications and web services. It can be used to test individual system components that have HTTP interfaces (JSP, ASP, CGI, PHP, AJAX, Servlets, HTML Forms, XML/SOAP Web Services, REST, etc).

* Is a command line tool
* Written in Perl can be installed on MS Windows, GNU/Linux, BSD, Solaris, MAC OS

**Pyresttest [ wAAACwAAAAAAQABAEACAkQBADs ](https://www.joecolantonio.com/2017/05/16/12-open-source-api-testing-tools-rest-soap-services/001-py/)**

[PyRestTest](https://github.com/svanoort/pyresttest) is a python based REST testing and API microbenchmarking tool

* You can write your tests in basic YAML or JSON config files, no code needed
* Returns exit codes on failure
* Only works on Mac and Linux

**Airborne [Plane](https://www.joecolantonio.com/2017/05/16/12-open-source-api-testing-tools-rest-soap-services/paperplane/)**

[Airborne](https://github.com/brooklynDev/airborne) is an open source Ruby based RSpec driven API testing framework.

* Works with Rack application like Sinatra and Grape
* Works with APIs written in Rails

Unirest

Recommended by [Unmesh Gundecha](https://twitter.com/upgundecha) [Unirest](http://unirest.io/) is a lightweight HTTP request client libraries.

* Can be combined with xUnit, BDD runner to make it a test tool

Mockbin [Bin](https://www.joecolantonio.com/2017/05/16/12-open-source-api-testing-tools-rest-soap-services/bin2/)

[Mockbin](http://mockbin.org/) was recommended by [Augusto Marietti](https://twitter.com/sonicaghi). Mockbin allows you to generate [custom endpoints](http://mockbin.org/bin/create) to test, mock, and track HTTP requests & responses between libraries, sockets and APIs.

* Mock Custom Endpoints
* Create Custom HTTP Methods
* Log and inspect incoming calls to your custom endpoints