API

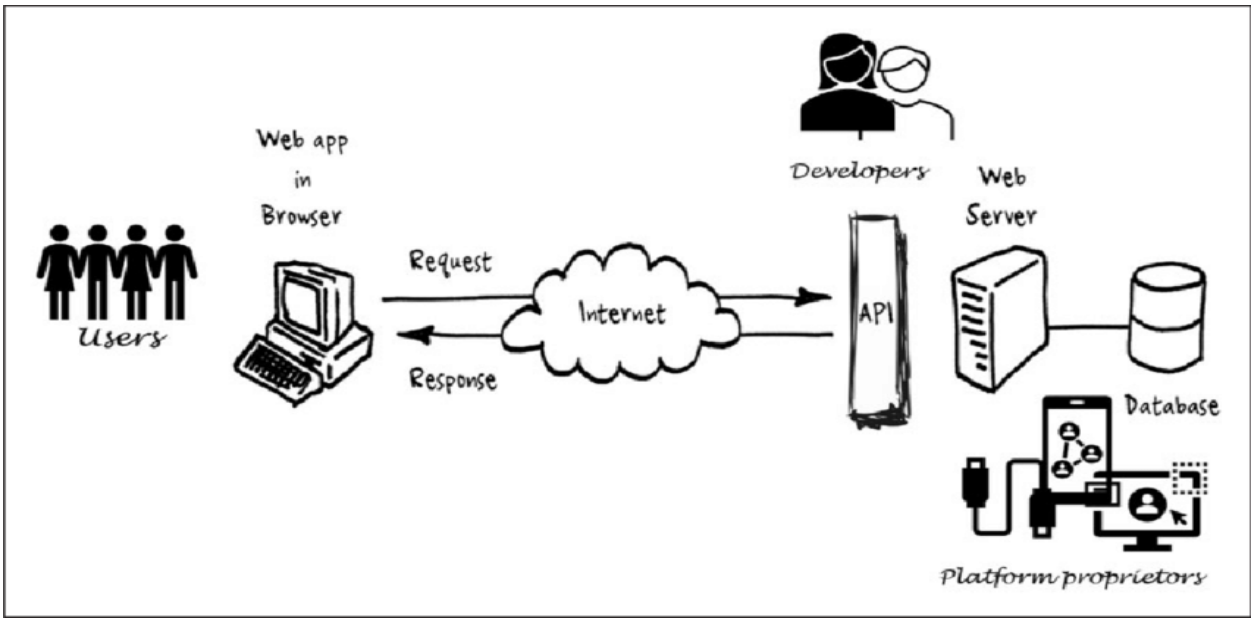
API stands for application programming interface. An API is basically a set of definitions and protocols that enable two applications to talk to one another. APIs are the connectors that enable most of the communications between the web applications, or apps, that we use today.

For example, if you use apps on your phone to check the weather, or send a message to friends, or to find the nearest cafe, you'll be using APIs without even knowing it.

APIs work by communicating with, and exchanging data between, other systems. They act as the messengers between us, the users, and the backend systems, allowing us to retrieve the data we want, when we want it.

There are three main types of APIs:

- Open APIs, which are publicly available with minimal restrictions to access them.
- Partner APIs, which need specific access rights to be able to use them and are typically exposed via an API developer portal.
- Internal APIs, which are hidden from external users and only exposed by internal systems. Typically, these are exposed via an internal API developer portal to enable authorization to the right set of APIs.



There are also two different ways that APIs can be implemented:

- Simple APIs, which are available separately.
- Composite APIs, where multiple data or service APIs are combined together, allowing developers to access several APIs at a time. For example, you'd implement composite APIs in a microservices architecture, where a user needs information from several endpoints to perform a single task, like the navigation app example we described previously.

Types of API protocols

To be able to use APIs effectively, developers must adhere to a common set of rules, or protocols, when making API calls. The term *API call* simply refers to the process of communicating with an API; in other words, an API call is when data is sent to and retrieved from an API endpoint.

There are three main types of API protocols:

- **REST.** REST is short for Representational State Transfer and is a web services API. It provides a uniform interface, where a client and server communicate with one another via Hypertext Transfer Protocol (HTTP), by using Uniform Resource Identifiers (URIs), the common Create, Read, Update, and Delete (CRUD) operations, and most often JavaScript Object Notation (JSON) conventions for data exchange.
- **SOAP.** SOAP is short for Simple Object Access Protocol and is another type of web services API. SOAP APIs have been used since the 1990s, but the protocol is stricter and more heavyweight than REST, so it isn’t used as much in modern API development.
- **RPC.** RPC is short for Remote Procedural Call and is the oldest and simplest type of API protocol. RPC is a request-response protocol, where a client sends a request to a remote server to execute a specific procedure, and then the client receives a response back. However, RPC APIs are much more difficult to maintain and update than REST APIs, so again RPC APIs aren’t used as much in modern API development.

API Testing tools

Here are some popular API tools:

1) Postman

Postman is a plugin in Google Chrome, and it can be used for testing API services. It is a powerful HTTP client to check web services. For manual or exploratory testing, Postman is a good choice for testing API.

Features:

- With Postman, almost all modern web API data can be extracted
- Helps you to write Boolean tests within Postman Interface
- You can create a collection of REST calls and save each call as part of a collection for execution in future
- For transmitting and receiving REST information, Postman is more reliable.

Download link: https://www.postman.com/

2) Ping API

Ping-API is API testing allows us to write test script in JavaScript and CoffeeScript to test your APIs. It will enable inspecting the HTTP API call with a complete request and response data.

Features:

- Ping- API to schedule test in every minutes or hour
- Support for writing script to set request headers, body, and URL parameters. It supports for writing script to validate response headers and body
- Validate CRUD flow and log in to Ping API

Download link: https://ping-api.com/

3) vREST

vREST API tool provides an online solution for automated testing, mocking, automatic recording, and specification of REST/HTTP APIs/RESTful APIs.

Features:

- It provides an exhaustive tool to validate your REST APIs quickly
- Helps you to delivers zero-defect web applications with less effort in API testing
- You can validate your web application
- No skilled resources are required, and it can generate documentation for your API specifications.

Download link: https://vrest.io/