Authentication versus authorization

Introduction

You need to secure your APIs because they provide third-party clients access to your backend data. If you don’t secure your APIs properly, anyone can tamper with the data and access sensitive information. But even if a client is allowed to access the data, you need to control who can do what. This is where authentication and authorization come in. You now know that although they sound similar, they are not the same. In this reading, you will learn about the difference between authentication and authorization and how you can use it to protect your API endpoints.

Authentication

Authentication is the process of verifying the credentials of a user. Logging into websites with a username and password is a typical example of authentication. When the username and password match, the website recognizes the user and sets some cookies in the user’s browser. When the user visits another page on that website, the browser sends those cookies within the HTTP request header. The website recognizes the cookies as well as server-side session data and therefore doesn’t ask for credentials until the user logs out again.

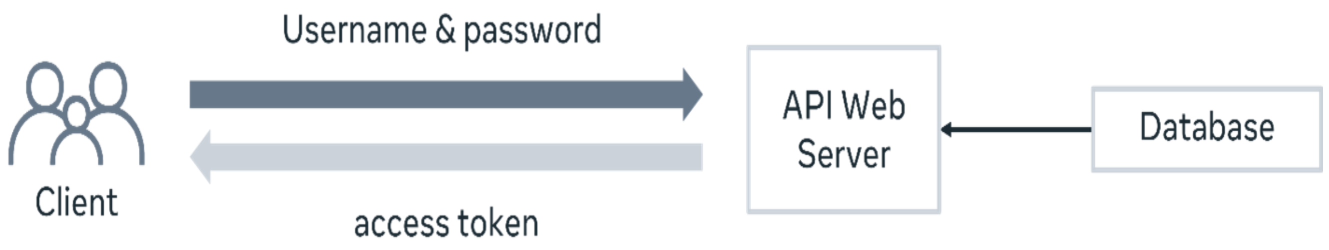
So, how does this work? Token-based authentication usually involves two steps in the API Architecture. First, the client identifies itself with a username and password. Then the API server gives it a bearer token. From there, the client includes the bearer token with every API call that it places. The API server verifies it and then allows the client to perform the action or not. This is where authorization comes in, but more on this later.

If the credentials are not valid, the client will receive a **401 - Unauthorized** HTTP status code.

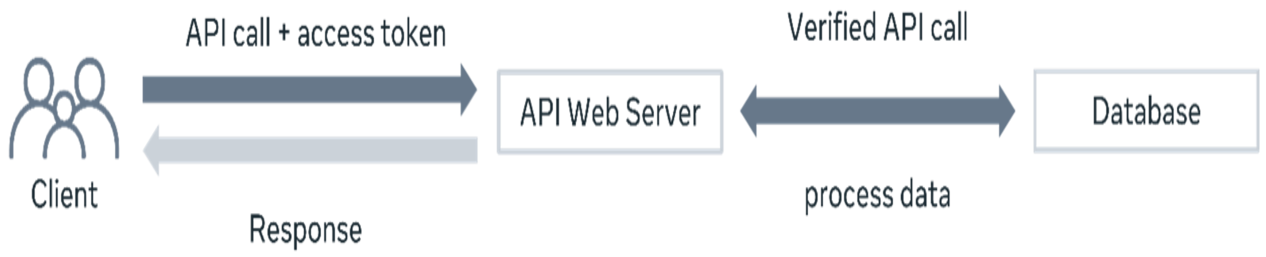
This is like coming to the office on the first day, submitting all your papers and documents, and then receiving your employee card. After that, only your employee card will be sufficient to get inside. Authentication works just like that!

The two steps in the API authentication process can be represented by the following two diagrams.

Authentication process: Getting an access token



Authenticated API calls

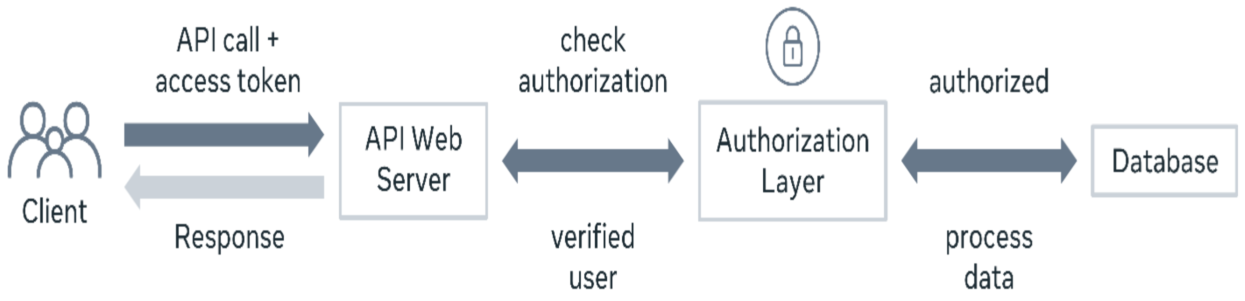


Authorization

However, even with your employee card, you will not be able to access all the rooms or spaces in the office. There are some places that are only accessible to a certain group of people who have been given that privilege. Authorization is exactly like that. Authentication lets you in, authorization lets you act. It checks after authentication if the user has the proper privileges to perform some tasks.

On the server side, this is typically done by assigning the user to a group or a set of groups. Then, after verifying the token, the code checks if the user belongs to the appropriate group to perform that task. If not, the client will receive a **403 - Forbidden** HTTP status code.

API authorization



This extra authorization layer in the API architecture ensures that only people with proper privileges can access and modify data. An authorization system in an API project is very important because it prevents data corruption and data breaches.

Implementing authorization

Privileges are the tasks that an API user performs, and they are the building blocks of an authorization layer. First, as an API developer, you identify the required privileges in your project. For example, for a bookshop, there might be the following types of privileges:

- Browse the books
- Add new books
- Edit books
- Delete books
- Place orders

There can be many other privileges like this. And not every user will have every privilege. For instance, regular customers are not allowed to add and edit books, even if they are properly authenticated. Only managers are allowed to perform those operations.

So, after identifying the privileges, you carefully distribute all these privileges into multiple roles. And then, the authorization check is done in the backend code of each API endpoint that requires a user role check. The developer verifies if the user belongs to the appropriate group or roles, and then makes the decision to allow or deny the action.

Conclusion

Authentication and authorization are concepts that differ in function and how they are set up in an API architecture. The knowledge you gained in this reading about user groups, roles and privileges lay the groundwork for all the steps that you will learn later on for setting up a proper security layer in your API projects.