REST API

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What is API?

API stands for Application Programming Interface. It is a set of rules and protocols that allows different software applications to communicate and interact with each other. APIs define the methods and data formats that applications can use to request or exchange information.

APIs play a crucial role in modern software development, as they enable different systems to work together and share data seamlessly. They abstract the underlying complexities of the software and provide a standardized way for developers to interact with a service or functionality.

Here are some key points about APIs:

- **Functionality Exposure:** APIs expose specific functionalities of an application or service to developers, allowing them to access and use those functionalities in their own applications.

- **Data Exchange:** APIs enable the exchange of data between different applications, services, or systems. They define the structure of the data (often using formats like JSON or XML) and the methods through which data can be retrieved or manipulated.

- **Language Agnostic:** APIs are designed to be language-agnostic, which means developers can use them regardless of the programming language they are using.

- **Web APIs:** Web APIs, often referred to as "RESTful APIs," are a common type of API that uses HTTP requests to perform operations like GET (retrieve data), POST (create data), PUT (update data), and DELETE (remove data). RESTful APIs are widely used in web development and are the backbone of many web services.

- **API Documentation:** APIs are documented to provide developers with information about the available endpoints, methods, parameters, and response formats. Good API documentation is essential for developers to understand how to use the API effectively.

- **Authentication and Authorization:** APIs often require authentication to ensure that only authorized users or applications can access certain functionalities or data.

- **Third-Party Integration:** APIs enable third-party developers to build applications that extend the functionality of existing services, platforms, or products.

- **Versioning:** As APIs evolve, it's common to have versioning to maintain backward compatibility. This ensures that existing applications continue to work as expected even as new features are introduced or existing ones are modified.

What is REST API?

REST API stands for Representational State Transfer Application Programming Interface. It is a web-based architectural style used for exchanging data between web servers and client applications.

REST APIs primarily utilize the Hypertext Transfer Protocol (HTTP) for transmitting data. They follow a set of principles and conventions, including statelessness, resource-based structure, and uniform interface. The statelessness principle means that each request from a client to a server must contain all the necessary information for the server to understand and process it, without relying on previous interactions.

The core concept of REST is the manipulation of resources through a set of standard HTTP methods, such as GET, POST, PUT, PATCH, and DELETE. These methods enable clients to retrieve, create, update, and delete resources on the server.

REST APIs typically return data in commonly used formats, such as JSON (JavaScript Object Notation) or XML (extensible Markup Language), which can be easily parsed and processed by client applications.

REST APIs have become widely adopted due to their simplicity, scalability, and compatibility with different programming languages and platforms. They are commonly used for building web services, mobile applications, and integrating various software systems.