What is REST API?

A REST API, or Representational State Transfer Application Programming Interface, is a set of rules and conventions for building and interacting with web services. It allows different software applications to communicate with each other over the internet by using standard HTTP methods like GET, POST, PUT, DELETE, etc., and exchanging data in a format such as JSON or XML.

The key principles of REST ful APIs include:

1. **Client-Server Architecture**: The client and server are separate entities that communicate through a uniform interface.
2. **Statelessness**: Each request from a client to the server must contain all the necessary information to understand and process the request. The server doesn't store any client state between requests.
3. **Cacheability**: Responses from the server can be labeled as cacheable or non-cacheable. This helps improve performance and scalability.
4. **Uniform Interface**: Resources are identified by URIs (Uniform Resource Identifiers), and interactions are done using standard HTTP methods like GET, POST, PUT, DELETE. The responses are typically in a standard format like JSON or XML.
5. **Layered System**: A client can't ordinarily tell whether it is connected directly to the end server or to an intermediary along the way. This allows for scalability and flexibility in the system architecture.
6. **Code on Demand (optional)**: Servers can provide executable code to clients in the form of applets or scripts. However, this constraint is optional and not commonly used in most RESTful APIs.

REST APIs are widely used for building web services and are the foundation of many modern web applications, providing a scalable and flexible way to integrate different systems and platforms.

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