

Building a GraphQL back end for financial applications: Checklist of best practices

Especially useful for: software developers, system architects, and project managers. Provides actionable insights and strategies to meet unique needs of the financial sector.



DEFINE DATA REQUIREMENTS

Why is it important?

Financial data is diverse. It includes customer transaction data and behavioral patterns, currency exchange rates, stock market prices, and a lot of other information, most of which is sensitive.

Defining precise data requirements and designing a corresponding GraphQL API schema helps to minimize unnecessary queries and API calls.

How can GraphQL help you do it?

GraphQL facilitates a design-first approach. Its strong type system and schema definition capabilities allow for precise modeling of financial data. This helps in creating an API that is intuitive and aligned with domain requirements.

IMPLEMENT ROBUST SECURITY MEASURES

Why is it important?

The financial sector is particularly vulnerable to security breaches, fraud, and other vulnerabilities. Due to data sensitivity, implementing security measures such as authentication, authorization, and KYC checks is critical in protecting against common vulnerabilities like injection attacks and data over-fetching.

How can GraphQL help you do it?

GraphQL allows for fine-grained access control at the API schema level. You can define permissions for specific fields or types and use query analysis to prevent malicious or overly complex queries.

OPTIMIZE PERFORMANCE WITH FASTER QUERY PROCESSING

Why is it important?

High performance is essential in financial applications for handling large data volumes and ensuring a responsive user experience. Optimizing queries for efficiency helps to avoid errors like over-fetching and under-fetching of data, reduce latency, and minimize redundant data retrieval.

How can GraphQL help you do it?

GraphQL's flexibility in querying only needed data reduces over-fetching. Techniques like query batching, caching, and resolving can greatly enhance performance.

□ PROVIDE REAL-TIME DATA UPDATES

Why is it important?

Financial applications rely heavily on real-time data to help customers make informed decisions. Delays in data retrieval can lead to financial inaccuracies and missed opportunities.

How can GraphQL help you do it?

The GraphQL subscription feature provides a mechanism for real-time data updates. When data changes, updates are pushed to the client immediately, ensuring timely data delivery.

□ HANDLE AND ADDRESS ERRORS

Why is it important?

Financial applications depend on precise data retrieval, as even the smallest error can have big consequences. Effective error handling during API integration and operation helps in diagnosing issues quickly, improving the app's reliability and user experience.

How can GraphQL help you do it?

GraphQL standardizes error responses, making them predictable and easy to handle. And it provides detailed error messages, helping developers efficiently identify and fix issues. By focusing on these key areas and capitalizing on GraphQL's strengths, financial applications can establish a robust, user-friendly, and scalable backend infrastructure.

□ VALIDATE FUNCTIONALITY THROUGH TESTING

Why is it important?

Testing helps to ensure the accuracy and reliability of financial applications. When it comes to back-end software development, common testing strategies include validating an API's functionality, performance, and security. The goal is to ensure that the GraphQL API handles queries and mutations correctly, maintains data integrity, performs under load, and has robust security measures.

How can GraphQL help you do it?

GraphQL's strong typing and schema validation can significantly streamline the testing process. The schema acts as a contract that can be used to automatically generate test cases. Additionally, tools like Apollo Server provide built-in support for testing GraphQL implementations, making it easier to set up and execute tests that ensure API reliability.

□ ENSURE DYNAMIC SCALABILITY

Why is it important?

Financial apps frequently experience fluctuations in user activity and data volume. The system should be able to accommodate those surges – for instance, during market hours, holidays, or financial events – and scale down to conserve resources during quieter periods. This dynamic scalability ensures consistent performance and reduces maintenance costs.

How can GraphQL help you do it?

GraphQL can enhance scalability through its data fetching capabilities. The ability of app customers to request exactly what they need reduces the load on servers. Furthermore, GraphQL integrates easily with modern cloud infrastructure and serverless architectures, which are inherently scalable. This means that as demand fluctuates, the system can automatically adjust resources, ensuring that the GraphQL back end remains responsive and efficient.

□ MEET COMPLIANCE REQUIREMENTS

Why is it important?

Since financial applications handle lots of sensitive user data, they are prime targets for cyber attacks. Therefore, adhering to security requirements is not only a legal necessity but fosters customer trust.

How can GraphQL help you do it?

While GraphQL does not specifically include any security compliance protocols, its flexibility allows it to be tailored to meet security-specific GDPR, HIPAA, and PCI-DSS requirements.

Moreover, integrating GraphQL with existing authentication and authorization systems ensures that data access is controlled and auditable, which is a key aspect of compliance. GraphQL can also be configured to log activities in a manner compliant with regulatory requirements, ensuring that financial institutions meet their legal obligations.

YALANTIS IN BRIEF

- 15+ years of experience
 - 500+ IT experts aboard
 - 35+ active clients
-

Project inquiries:

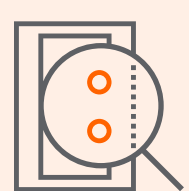
- hello@yalantis.com

Phone number:

- +1 213 401 9311
-

Our offices:

- Poland
- Ukraine
- Cyprus
- Estonia



IS YOUR FINANCIAL APPLICATION'S BACK END STRUGGLING TO KEEP UP WITH REAL-TIME DATA DEMANDS AND SCALABILITY NEEDS?

Yalantis provides tailored solutions aligned with data engineering best practices

[CONTACT US](#)