Case Study

Developed the server-side core for an online trading platform to handle thousands of concurrent users connected at the same time.

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Summary

We built the server-side core and the complete backend infrastructure for a large-scale online trading platform that is now active in the Middle East. The client sought our technical expertise to develop the server-side core that may handle thousands of concurrent users connected at the same time. The platform core sends multiple messages to the server every second about the latest currency prices and stock values. Here, we are dealing with thousands of messages per second that are handled by the server. We designed the core in a way that the server is flexible enough to expand (horizontally and vertically) to scale the increasing userbase and the growing influx of messages.

Industry
Brokerage, stock trading

Users/customers
Brokers, clients, dealers

Tech Stack
Java 8 (JDK), Spring Boot, Redis Pub/Sub, Docker, IDE- IntelliJ IDEA/STS

Team Size
5 Oodlites
(1 Sr. Project Manager, 3 Backend Developers, 1 Android Developer)

Scope of Work (SoW)

The scope of work (SoW) required us to develop the server-side core for an online trading platform that enables users to start their own brokerage firm. The client sought our services to develop the backend infrastructure for a comprehensive trading platform that caters to the diverse needs of brokers. The project requirements were as follows:

1. Developing a Web Trading Platform

The client asked us to develop a web application with advanced trading capabilities that enables brokers to add clients for uninterrupted trading. The clients can trade from anywhere, across a variety of devices including laptops, desktops, tablets, and smartphones.

2. Developing The Server-side Core

Our team was responsible for building their server-side core that may scale thousands of concurrent users at any given time.

3. A Robust Messaging Architecture

The application required a robust messaging infrastructure for broadcasting prices to multiple servers with a number of messages per second.

4. Trade Screen Functionality

A responsive trade screen was required that displays the trade history of clients as well as the buy/sell price of the currency.

5. Mobile App Development

The SOW also required us to develop a cross-platform mobile application to facilitate seamless trading across mobile devices

Solution

We deployed a team of 5 members (on different positions) to handle the tasks at hand. It included one project manager, three backend developers, and one Android developer. Our team began with a careful analysis of the client's existing data model as well as its software architecture. To achieve the required functionalities, we used microservice-based architecture and developed REST APIs for different modules to facilitate seamless communication between different app components. We used open-source technologies including Spring Boot, Redis, and PostgreSQL to achieve the required functionalities by carrying out the development in a phased manner.

We provided the following deliverables to our client:

1. Built The Server-side Core

We developed the server-side core using Java and Spring Boot on top of the Linux operating system. The solution we provided was highly scalable and flexible enough to accommodate new features without impacting the overall performance.

2. Established a Microservice-based Architecture

Our team used Spring Boot to build and deploy custom Microservices at scale to achieve the client's requirements. By establishing a robust Microservice architecture, we provided the backend interface for user login, administration, trading, order monitoring, and financial standing.

3. Provided a Robust Messaging Architecture

We built a robust messaging system using Redis Pub/Sub that is capable of handling thousands of messages per second. Furthermore, we connected the client-side application to the server core for receiving messages that are broadcasted from third-party apps using the DDE server in real-time.

4. Automatic Liquidation On a Real-time Basis

Our solution enabled the server-side application to continuously monitor clients' margin and equity values. If the price falls below a specified value, the client's pending orders/trades are automatically liquidated.

5. Developed The Web and Mobile Application

Our team built a scalable and responsive web application that supports all major web browsers and offers advanced trading features as requested by the client. We also deployed a dedicated resource for mobile app development to optimize the platform for mobile devices and make it accessible to Android and iOS users.

Results

We successfully completed the project within the stipulated time frame and achieved our client's requirements with the following deliverables:

1. Built the server-side core and the backend infrastructure for the online trading platform.
2. Rendered database support to handle thousands of messages per second.
3. Established a microservice architecture for user login and administration.
4. Created the trading infrastructure with APIs for new markets, closed markets, entry orders, SLTP orders, etc.
5. Developed microservices for order monitoring and financial standing with advanced features like buy/sell automation and auto-liquidation.
6. Rendered complete support for web and mobile app development for the trading platform.

The project has been completed successfully and is currently in the continuous enhancement phase. Our two backend developers are still deployed on the project for maintenance purposes.

About Oodles ERP

Oodles ERP is a software services company that offers complete enterprise software development services with a focus on implementing next-gen technologies. With a proven track record in custom ERP development, we have successfully completed 50+ software projects related to CRM, HRM, inventory/warehouse, eCommerce, supply chain, and logistics. We are mainly focused on helping startups and small-to-medium enterprises to achieve digital transformation through cost-effective ERP software solutions.

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