



How **Direction Software LLP** designed a real time Web Sockets Communication (SignalR) Solution

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This Company provides real time desktop application solution to its clients for participating in live auctions to trade with advanced features such as auto login, auto start, notification, advanced trade matching logic.

Summary

Using this application, they can launch auctions and trader can participate in this auction and can make trade. There are advanced features included in this solution. With this desktop application, once user logs in application and next time when the user restarts the system, auto login happens. Even if the user closes application, he will get auction related notifications. User can match across different tenors (single and spread tenor), which was not possible in their existing web portal. IP restrictions policy are developed considering the 'Work from home' scenario.

At broker side, trader sessions (active and logged in both) can be viewed. If trade is matched, then in real time broker can see that trade in quick ticket's match details screen. Auto login and notifications are added for broker application as well.

Challenges

- Real time notifications, View match logic improvement and auto login
- Showing notification to user even when user is not working on application was a difficult task. Real time notification loss used to happen due to background parallel task. UI freezing issues happened due to real time background working
- Saving credentials securely and auto logging next time when application restarts
- Auto startup of application when machine reboots had to work in similar manner
- View match logic across different tenor spread such as single tenor and box spread was quite complicated
- Showing live and active user sessions to broker GMG as some users don't participate in auction and are just logged in

Solutions

- We analyzed that main reasons of moving to desktop applications was showing notification alert in front above all screens so that user will be attentive, even when he is not at his machine. With web application notification alert was not possible. Because it was handled within web browser and was missed by user. This got possible by showing windows message dialog which can't be closed without user interaction
- In web, after session expiration or when user used to close web browser, user had to login each time. Hence showing notification or auction participation was not possible. So it was important to develop auto login feature and also launch the application automatically when the system reboots. This saves user time and application becomes more user friendly
- To achieve this solution, credentials were saved in encrypted format at user machine. When application is restarted, login is automatically done using the saved credentials. When the user logs out, these credentials are removed
- Trade matching logic across single and spread tenor was quite complex. This logic was developed at web server side, which is responsible for API and real time auction communication. Lot of test cases were created and logic got developed in sequential manner after going through various testing sessions and scenarios
- When user logs in a login message is sent to Broker and when the user participates in auction then respective auction participation message is sent to broker. Auction participated traders are shown in green color at the broker application.



Benefits

- Now user can see popup dialog notifications of auction and no notification will be missed by user
- If user closes the application, he will still be able to receive notifications due to application running in the background
- Due to auto login, User don't have to open and re-login each time unless he logs out manually. Even when machine is restarted, auto login happens
- Broker will be able to see live trader and active participated traders

Technologies and Tools used

- Asp.net core 3.1 web application and SignalR
- .Net Winforms desktop application
- .Net framework 4.8
- Devexpress UI library
- MSSQL server - RDBMS
- Windows Service
- Azure cloud server - virtual machine

About Direction Software LLP

We are a software services firm, specializing in developing & implementing Internet strategies for businesses & providing high-end software development services including Custom Programming & Offshore Development.

With 17,000 sq. ft. of space in a modern building in central Mumbai the hub of all business activities in Mumbai, Direction Software LLP is fully equipped with state-of-the-art infrastructure and networked with redundant high speed, dedicated internet access from different providers.

Our vision is to be a trusted IT partner, leveraging our knowledge of tools and technologies to provide simple, integrated and innovative solutions that result in maximum customer satisfaction.

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