

Fixed Income Trading Platform Architecture

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Architecture



Gen Reqs of Trading Platform

- Reliability/Stability
- Performance
- Scalability
- Security
- Fault Tolerance
- Open Architecture
 - Open APIs
 - Easy Integration

Front End

- Users
 - Traders
 - Risk Management Group
 - Operations
 - Support
- Applications
 - Trade Capture
 - Quote Entry
 - Risk Analytics
 - Operations etc.
- Technologies
 - Excel + Vendor Libraries
 - C++
 - Java
 - C# (latest development)
- Platforms
 - Windows
 - Unix (X-Windows)

Application Servers

- Application Servers
 - Pricing Engine, Risk/Analytics Engine, Market Data Server etc
- Technologies
 - Simple High Performance Architecture
 - Java (Core Java)
 - C++/C#
 - Communication Software (TIBCO EMS, SOAP etc)
 - Vendor APIs in case vendor products, etc

Database

- Database
 - Sybase, Oracle, MS SQL Server etc
 - MS Access for simple Excel based single user applications

Multi-tier Architecture

- Communication Protocols
 - Synchronous – TCP/IP etc
 - Asynchronous
 - Messaging
- Messaging
 - Publish/Subscribe
 - Point-to-point
 - MQ, Tibco etc
- Java – JMS, RMI, Sockets, WebServices etc
- .Net – Remoting, WebServices etc

Design Considerations

- Scalable and Powerful platform
- Processor Power – complex calculations
 - Pricing
 - Analytics
 - Risk Measures

Backoffice

- Usually different from Trading Systems
- Settlement
- Accounting & Finance
- Regulations/Compliance
 - Usually External Service Providers
- Custodian Houses
- Many vendor softwares available

Vendor Trading Platforms

- Popular FI Trading Systems
 - Bloomberg Professional – Full Service
 - Reuters Trading for Fixed Income – Full Service
 - Winfits (just software) etc
- Differences
 - Provide most of the basic features
 - Connectivity with Liquidity Sources
 - Algorithms of Analytics
 - Risk Measures
 - Support of complex products
 - STP (Straight Through processing)

Bloomberg/Reuters Trading Systems

- Full Service Trading Platforms
 - Trade Entry
 - Market Data
 - Analytics
- Connect to
 - Liquidation Sources (ECNs etc)
 - Other Broker/Dealers
 - Large Clients etc

Technology Team

- Front-end Developers
 - GUI developers with reasonable understanding of the products, fundamentals of Fixed Income mathematics
- Pricing Engine
 - Back-end developers
 - Core language expertise (VBA, Java, C++, multi-threading, data structures, performance etc)
 - In-depth knowledge of Product Evaluation methods
 - Mathematics educational background
 - Ph.D, MS in math and finance, or some certifications in finance etc

Technology Team cont..

- Risk Engine
 - Complex APIs and Application Server
 - Advanced Math Degree
 - Advanced Finance Education, Ph.D, CFA etc
 - Usually available in the form of APIs or Vendor product
- Other Technical Skill
 - Platform skill – Unix scripting, architecture, performance etc

Technology Team cont..

- QA / Testing
 - Good understanding of Markets and Products
 - Excel (VBA)
 - Good understanding of Trading
 - Knowledge of Risk Measures etc
 - Potential growth to move into Business/Support
- Support Team
 - Provide day to day system support
 - Troubleshooting
 - Platform Knowledge (Unix scripting, excel, VBA etc)
 - Good business knowledge
 - Good Communication Skills etc.

Quants

- Quantitative Analysts – Financial Engineers
- Role
 - Developing Pricing Models, Risk Models, Trading Strategies, etc
 - Assisting Traders in Trading Strategy development and testing
 - Build and Perform Regression tests, Stress tests etc

Thank You
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