



### Stock Application:

Developed an Application to Process Listed Derivative trades which consisted of the following primary steps:

#### Execution and Shaping (trading system)

- business was executed on the exchange
- business known on the exchange was 'shaped' to form a 'client total'
- shaping can involve splitting or combining fills known on the exchange

#### Allocation (sales system)

- an allocation was requested by the client
- an algorithm may be applied as part of the allocation (average pricing, fair, worst/best etc.)

#### Matching

- the allocation was matched to business known for the client (at the clearing house)

#### Clearing

- instructions were exchanged with the clearing house to satisfy the allocation
- this process places trades in the correct clearing house box location, and may also calculate offsets

#### Confirmation (BACK OFFICE)

- The results of the allocation were booked to the customer sub ledger and confirmed overnight.

### Technology

#### Platform

Stock Application is a 3-tier design consisting of a lightweight desktop application, multiple server side components, and a database layer

Programming is 100% Java. Rendezvous, RMI, J2EE, Swing and Sybase are core technologies

Desktop is delivered on NT/XP, Server is hosted on Solaris.

The application components use **EJB's** for communication between the thick swing desktop client and the server. The **EJB's** are deployed on a cluster of **Weblogic 8.1** servers. The server components are implemented as **Stateless Session beans**. The server components talk to each other using RV's JMS implementation. The database layer is built using hibernate as an OR mapping tool. **Hibernate's** optimistic locking feature is used extensively for avoiding concurrency problems between the server components

Activity	Matching Required	Sample Order	Sample Trade
Contracts traded "Open Outcry"	Exact	Buy 20 @ 101	Buy 20@101
Contracts traded electronically	1:Many	Buy 20 @ 101	Buy 1@101 Buy 3@101 ; ;
Contracts traded in an auction	Many:1	Buy 20 @ 101 Buy 30 @ 101 ; ;	Buy 1000 @ 101
Contracts traded with Client as principal	Many:Many	Buy 20 @ 101 Buy 30 @ 101 ; ;	Buy 200@101 Buy 200@101 ; ;
Contracts requiring Clearing	Soft Matching	Buy 20 @ 101 Customer	Buy 20 @ 101 House
Investigating Breaks	Near Matching	Buy 20 @ 102	Buy 21 @ 102



Activity Type	Description	Action Required
Matching	Business must be balanced to the clearing house by the time the clearing session closes (typically 90 minutes after trading close)	Balance during the day. Report discrepancies to house traders, customers, other brokers.
Give Out	Business was executed by Client for clearance at another broker	Offer the trades to another broker and confirm that they have accepted it (risk remains with Client until business is successfully given out)
Give In (or Claim)	Business was executed by another broker for clearance at Client	Accept offered business from customers executing brokers Confirm details with client or auto-accept Chase the execution broker for trades
Segregation	Client holds several accounts at each clearing house for different flows In principle the account can be specified when the order is placed in the market. In practice this is unreliable.	Place each trade into the correct account (e.g. house, customer market maker, and member, affiliate). Obey rules governing type and number of allowed changes.
Fees	Some exchanges have a membership structure for end customers. Depending upon membership, fee discounts will be applied.	Derive the correct fee type information from the underlying account and post to clearing house.
Splits	A single order can be allocated to clear at multiple brokers. We may receive details for part of an order hours before the remainder. We must clear 'pieces of orders' accordingly.	Split individual trades into smaller pieces to allow additional processing such as Give Out to take place.
Closeouts	Clearing houses maintain balance information for the overall market. These drive open interest reports and option assignment processing.	Calculate positions, apply net off rules and determine correct open/close status on a position (overnight) or transaction by transaction (intraday) basis
Reversals	On some markets the results of various processing types can be changed several days after trade date	Handle the above scenarios on a historical basis.
Suspension	On any day some business may not clear due to late information	Business must be booked to suspense and handled next day