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# ULTRA-SECURE DAY TRADING SYSTEM

**Case Study**



# Thapovan

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## The Client

The Client is a day trading firm based in New York, with a network of day traders who are either employees of the firm or external brokers/traders who subscribe to the firm's hardware and software services. Each trader/broker has a few hundred clients and a unique trader ID to serve them. At the end of each day, a clearing agent clears the day trades via their secure FTP site. Each morning the client downloads the details of several thousand trades executed the previous day, for analysis, accounting and reporting. The reports provide information on profit and loss accounts, commission calculations, subscription charges for external traders, and intelligence to management and other interested parties.

## The Business Challenge

Speed, accuracy and security are crucial elements of day trading, and any compromise to the data threatens the health of the business. Each morning there is a short time window for the client to download several raw data files, including trades, futures, assets, and other activities each containing up to 30,000 records and each record containing 120 columns. The raw data has to be immediately uploaded to the SQL server database at the client office. The upload has to be normalized to different tables and processed for reporting to management.

Specific functions that needed to be addressed by a highly secure trader system included:

- **Seamlessness:** A process that runs uninterrupted is required for handling data. Any missteps in the process may result in loss or misrepresentation of data. The process cannot be run on holidays or weekends.
- **Immediacy:** Reports need to be auto generated as soon as normalization and processing of data is completed, and E-mailed in a PDF format to individual traders and management.
- **Security:** Any break in the process is to be detected immediately and the administrator alerted.
- **Archiving:** Data needs to be automatically archived after every 3 months or when the file size exceeds a certain limit, whichever comes first.
- **Organization:** Report data in the web must be paged, sorted and grouped, and exported to PDF or Excel as desired by the user.
- **User-friendliness:** A visual reporting system is required for showing the results in pie and bar charts.

The client was also interested in a partner who could:

- Offer cost-effective upgrades to the day trading system through the lifecycle of the relationship.
- Leverage any new breed of technologies that come to market.

## The Engagement

The client chose the Thapovan team of professionals based on its reputation for creating high-performance applications that offer speed and consistency. They also chose Thapovan because of its consistent commitment to quality as confirmed by its satisfied customer base.

The engagement included the following:

- Analysis of business requirements and technical specifications.
- Design and development of seamless core trader/reporting application.
- Cooperation and collaboration with the client's development team.
- Testing, benchmarking performance, and solution identification.
- Implementation of best-of-breed technology solutions.
- Routine quality assurance management and change management.

## Solution Highlights

The new model for the ultra-secure trader profile and reporting system, provided by Thapovan, had the following secure, time-saving and user-friendly features:

- **New processing:** Downloading the raw trade data files from the clearing agent is scheduled using Windows scheduler; a Holiday table in the database restricts the process from downloading files during holidays.
- **Ease of management:** Information like server details, files, dates, and times are configured in an XML file for ease of maintenance. Any change in parameters, either from the clearing agent or the client can be supported by updating the XML files.
- **Time Saving:** Thapovan introduced the bulk insert feature to the SQL server database, which holds the raw trade data files. This feature reduced the processing time from 3 hours to 10 minutes. Once the data is uploaded stored procedures trigger the normalization and processing of data.
- **Real-time:** The status at the end of each stage of operation is mailed to the administrator for close monitoring.
- **Security:** The STRUTS pre-processor feature was implemented to restrict access to sensitive data.
- **Simplification:** Thapovan developed a simple trader profile system that benefits the relationship with the clearing agent, as well as details the services consumed by external traders.
- **Reporting:** The BIRT (Business Intelligence and Reporting Tools) engine was introduced in the system as an open source software to create ad-hoc reports based on trade activity.

- **Auto-Archiving:** Windows Scheduler and SQL Server JOB feature were used to implement the auto archiving process.
- **Organization:** Display tag open source library was used to implement pagination, sorting and exporting of hundreds of rows of report data to Excel and PDF formats.

## Technology Environment

### Major Technology Components:

Language:	Java ( JDK 1.6 )
Application serve:	Jboss 4.2.1
Database:	SQL Server 2005
Framework:	Struts 1.1
Reporting tool:	BIRT 2.3.2
Other tools:	Display tag library 1.1 , JSTL

## Results Achieved

The client achieved the following major benefits from the partnership with Thapovan:

- Developing a total closed loop solution for secure trader profiling and reporting, and building strong relationships with the respective managements and with the clearing agent.
- Achieving immediate buy-in from the user base.
- Obtaining extraordinary time saving during the information processing stage (3 hours reduced to 10 minutes).
- Achieving cost and time efficiencies beyond expectations.
- Forging a partnership with Thapovan that would extend far beyond this particular project.