

Extreme FX Transaction Performance

Sun™ and Wall Street Systems



Highlights

- Decrease processing time for FX transactions and increase business process efficiency with Wallstreet FX software running on the Solaris™ 10 Operating System (OS)
- Gain a comprehensive front-to-back solution for complete trade lifecycle management
- Pinpoint positions and analyze risk in real time to make informed, timely business decisions
- Integrate with general ledger applications, external trading venues, third-party vendors and in-house proprietary systems
- Adhere to regulatory requirements with complete audit histories of trade lifecycle and system processes
- Utilize an ideal platform for the Wallstreet FX software with UltraSPARC™ processor-based systems from Sun™
- Leverage Sun software technologies such as the Solaris 10 OS and Solaris Cluster software



Firms trading in today's global FX trading market face a bewildering array of business obstacles. Soaring FX trading volumes, client demand for more products and services, increased regulatory pressures, narrowing spreads, and the need to reduce transaction costs are compelling firms to find innovative methods for overcoming these challenges. Sun and Wall Street Systems offer an FX trading solution that enables banks to manage huge transaction volumes, provide the best possible customer service, minimize costs, and meet regulatory requirements — while increasing profits and achieving a competitive position in the FX market.

The challenges

The emergence of FX as an asset class coupled with increased e-FX delivery channels, algorithmic trading, and the growth of FX prime brokerage is causing FX trading volumes to soar. At the same time, banks are being pressed to offer more products and services to clients while facing increasing regulatory and compliance pressures. In addition, spreads are narrowing, and banks must bring down the cost of transactions to remain competitive. Financial institutions with significant foreign exchange operations must replace legacy systems, create standard processes and controls, and rein in costs in order to overcome these pressures and compete successfully.

Wall Street Systems beats the challenges

The Wallstreet FX software provides high-performance, real-time trade processing solutions for currency management. With users in 31 countries, Wallstreet FX processes over 300,000 transactions valued at \$1.6 trillion per day. The Wallstreet FX software provides a comprehensive front-to-back solution for complete trade lifecycle management and addresses key functional areas within financial institutions:

- Trading and money management — eFX trading requires the ability to pinpoint real-time positions and analyze risk. Without accurate data and powerful tools, portfolio managers cannot make informed, timely business decisions.

- Sales — Servicing financial and corporate clients requires a broad range of functions. Wallstreet FX contains utilities for pre- and post-trades, pricing, and effectively managing sales margins and profitability.
- Risk management — Obtaining information on counterparty credit exposures and trader and position limits is vital for managers to contain risk. The Wallstreet FX software gleans data on limits and exposure as well as providing flexible trade surveillance monitoring with real-time alerts and overage reports to help managers stay on top of swiftly changing trading conditions.
- Operations — Managing settlement, confirmation, payment, and cash management processes is a function of the operations staff. The Wallstreet FX software contains a configurable workflow model for managing the various settlement processes.
- Accounting — The powerful Wallstreet FX software can be integrated with General Ledger applications and provides reporting capabilities enabling managers to drill down to individual transaction levels for more finely detailed information.
- Compliance — With Wallstreet FX software, staff can obtain complete audit histories of trade lifecycle and system processes, helping firms to adhere to regulatory oversight. In compliance with reporting requirements, the system also utilizes an open database model.
- IT — Wall Street Systems offers standard market and custom interfaces for seamless integration to external trading venues, third-party vendors, in-house proprietary systems, and market data providers. The result is a single, comprehensive system that helps to gather and present vital, timely information for critical business decisions.

Processing transactions with Wallstreet FX

The Wallstreet FX Transaction processing cycle consists of a single stream, multilayered component structure.

Each layer is served by parallel processes running key server side executables. These executables perform specific tasks and then relay the transaction data to the next layer in the sequence. The layers are Integration, Registration, FX Position, Operations, Counterparty Credit and Sales, Multi-Asset Position, Accounting, and Reporting.

Integration

The Integration layer contains the first entry points to the Wallstreet FX system. Requests to generate FX transactions can be received from many electronic FX trading platforms, client applications and portals, and from Wallstreet FX deal capture capabilities. Key actions in this layer are acknowledgment, validation, and routing forward of transactions within the Wallstreet FX system.

Registration

Incoming FX transactions become Wallstreet FX transactions in the Registration layer. Rules-based routing is initiated at this stage, determined by deal type, tenor, currency pair or other criteria. A number of transaction risk calculations are also performed and can be applied to the transaction routing decision tree. Users are advised of new inbound transaction traffic at this time.

FX Position

Because FX position and risk management are extremely time-sensitive functions vital to processing FX transactions, the FX Position layer is a key component of the Wallstreet FX transaction processing cycle. Using multiple memory resident servers, all positions — spot or forward, portfolio, desk, branch, and global levels — are updated. In this stage, users are notified in real time of changes in positions and their effect on risk and P&L.

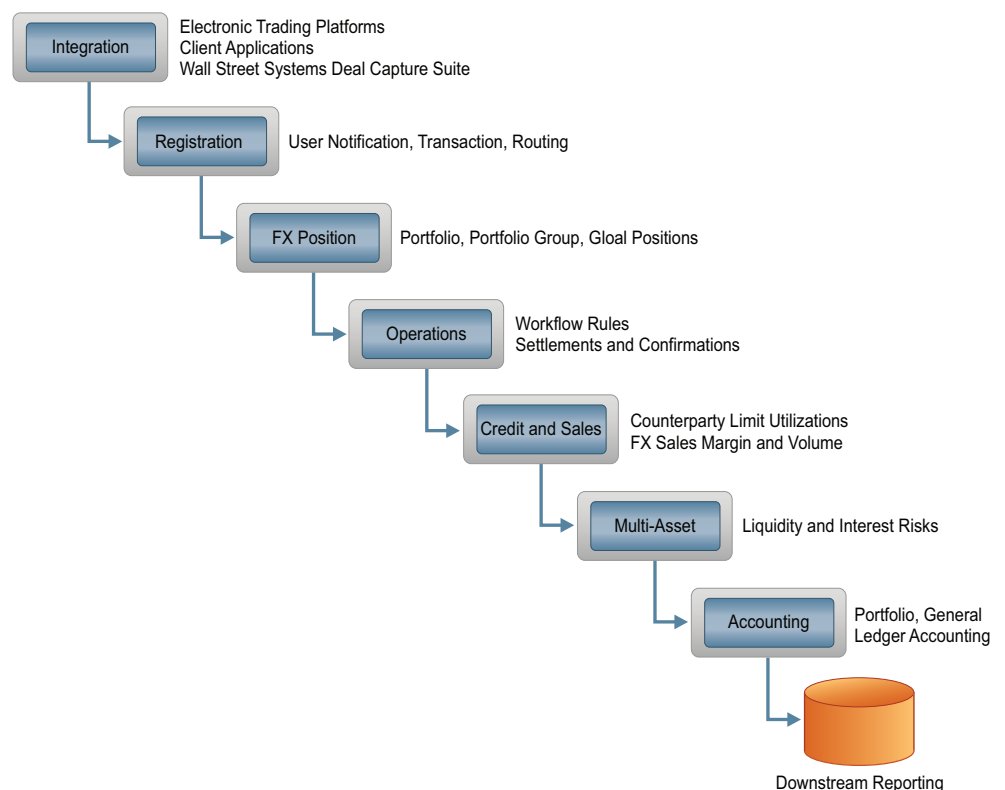


Figure 1. The Wallstreet FX transaction processing cycle.

Operations

Operational processing, such as confirmation and payment generation and continuous linked settlement (CLS) notifications, must occur in a timely and efficient manner. In the Operations layer, pre-defined workflow rules evaluate the transaction for further verification, or the confirmation and payment process begins if all straight through processing (STP) rules are met.

Credit and Sales

Counterparty credit, FX sales margin and volume statistics, and brokerage are all updated as part of the Credit and Sales layer. In addition, surveillance of counterparty credit exposures provides real-time alerts in the case of overlines.

Multi-Asset Position

The Wallstreet FX System offers a suite of analysis tools for the calculation of cross asset liquidity and interest risk, spot risk, and price value of 1 bp (PV01). FX transactions are a key component of these analyses and are integrated in the Multi-Asset Position layer.

Accounting

The Accounting layer generates detailed accounting postings at individual transaction levels and updates account balances relating to the booking of FX transactions. Postings may consist of cash, contingent, sales margin, fee and brokerage components, and can be qualified by predefined criteria. In addition, all account postings and updates can be generated at individual portfolio and group levels.

Reporting

The Reporting layer of the transaction cycle provides transaction data to downstream systems for processing and updating all reporting databases. This layer marks the end point of the processing cycle.

Running Wallstreet FX software on Sun

The synergy of Sun systems, the Solaris™ 10 Operating System (OS), and Wallstreet FX software brings innovative advancements to the financial services industry. In addition, Sun's Solaris™ Cluster software can help Wall Street Systems software to attain the highest possible levels of availability, and Solaris Containers technology can help enable scaling the Wallstreet FX software in new and potentially powerful combinations. With an optimal combination of user, administrator, and developer tools, the bundled software contained in the Solaris 10 OS provides users of Wall Street Systems software with a comprehensive portfolio at no extra charge.

Optimizing the Wallstreet FX application

Because no two businesses, environments, or even workloads are ever the same, it can be helpful to look at performance in a given environment to understand how the Wallstreet FX software running on Sun servers might apply. Sun and Wall Street Systems engineers recently tested a sample configuration to gain an understanding of how the solution performs. The engineers took advantage of key features contained in the Solaris 10 OS to help optimize application performance.

Solaris™ Dynamic Tracing

One of the most significant Solaris 10 OS features utilized during testing is Solaris Dynamic Tracing (DTrace). DTrace provides a dynamic framework that traces various system attributes in real time on production systems. With a system-level view of application and kernel activities, DTrace runs dynamically without modifying or restarting applications or rebooting the system. DTrace gives organizations the ability to monitor system events and pinpoint areas where applications can be optimized or enhanced.

Using DTrace on the test systems enabled Sun and Wall Street Systems engineers to optimally tune the environment and achieve the highest Wallstreet FX performance levels seen to date.

Testing the Wallstreet FX application

Using an iterative testing methodology, numerous combinations of machine, operating system, and database settings were implemented. Different combinations of instantiations of FX transaction processing layers were tested to ascertain the optimal level for the machine, operating system, and database environment. The testing was comprised of two components — burst and sustained throughputs. Engineers tested the burst throughput rate with an upload of 1,000 FX spot deals having a start to end time of less than 30 seconds. Sustained throughput was measured by uploading 100,000 FX spot deals having a substantially longer elapsed time.

Test equipment

Tests were performed on a midrange Sun Fire™ 4900 server. Configured with 48 GB of RAM, the server contained an UltraSPARC™ IV+ 1.2 GHz processor. The Sun StorageTek™ 3510 array served as the storage array for the testing. With enterprise-class features and functionality, the array is extremely easy to deploy, configure, monitor, and manage.

Software enhancements

Based on the testing effort, FX transaction processing cycle components were re-thought and re-engineered to enhance the solution:

- Multiple FX processing streams — To support substantial increases in FX trading volumes, additional processing streams can be added. While identical to the standard processing cycle, all elements, sequences, and processing phases utilize separate parallel instantiations. The addition of extra processing streams also enables high value transactions to be prioritized.

- Rationalization of main server side executables — Frequently accessed data is now held in memory and single record updates are configurable. Additional memory-resident servers handle back office and CLS record updates.
- Parallel processing — Certain processes once part of the FX transaction processing cycle are now set up as services running in parallel or slightly behind the main process flow.
- Database rationalization — Rationalizing the database update model removes redundant data, reduces I/O in the transaction processing cycle, and eliminates unnecessary data reconciliation steps.
- Accounting postings — No longer part of the processing cycle, the generation of postings and balance updates now runs in batch mode. Postings and updates for transactions with certain value dates can be prioritized over other transactions to avoid adversely impacting periods of high volume.
- Prioritization of Reporting layer — In order to increase the availability of the transaction level data for downstream consumers and reporting purposes, the sequencing of the Reporting layer in the transaction processing cycle can be prioritized.

Test results

Tests show that the Wallstreet FX software running on Sun hardware achieves excellent performance, scaling efficiently from short burst to sustained throughput. Figure 2 contains the maximum results of processing 1,000 and 100,000 FX spot deals with combinations of 15 area/portfolios, 20 currency pairs, and 52 counterparties.

About Sun and Wall Street Systems

A market leader in treasury and FX trade processing, Wall Street Systems builds and deploys foreign currency management solutions for a diverse client base. Best known for providing functionally rich, integrated, scalable solutions that can improve workflow, control, and greatly reduce transaction costs, Wall Street Systems is also recognized for its global back-office solutions. With over 300 banking, corporate, and central bank customers, Wall Street Systems' award-winning software is used by leading organizations around the world.

Learn More
For more information, visit sun.com, wallstreetsystems.com, or contact your local sales representative.

With years of experience in financial services, Sun's advanced technologies and solutions can help financial services IT departments adapt swiftly, deliver extreme real-time security and availability, and ensure data integrity with full accountability. With unique expertise in Java™ technology and service-oriented architectures, Sun can help clients launch sophisticated next generation services with confidence.

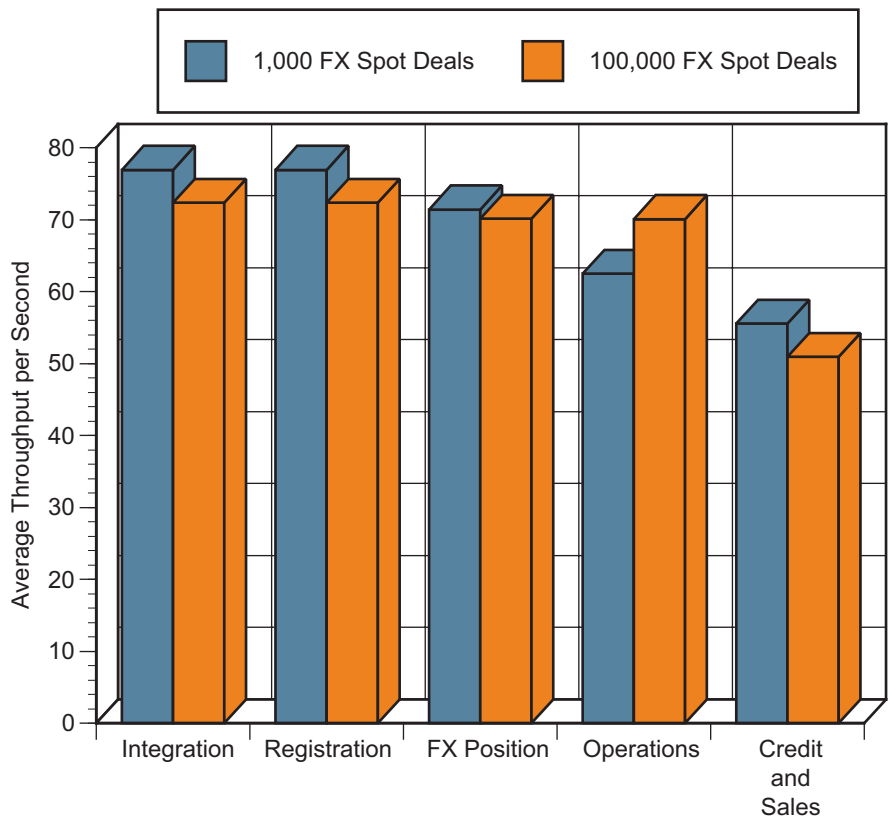


Figure 2. Test results for short burst and sustained throughput FX spot deal transactions.



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