Table of Contents

3  |  TIBCO StreamBase for Algorithmic Trading
4  |  Attributes and Capabilities
5  |  End-to-End Connectivity
5  |  Integration with Existing Systems
6  |  Platform, Standards, and Security
TIBCO StreamBase® enables quants and developers to rapidly develop and back test algorithmic trading strategies. This capability allows the organization to deploy the most successful strategies into production against real-time data and make real-time trading decisions. Once implemented in StreamBase, algorithmic trading strategies can be changed rapidly to react to real-time market conditions. As trades are being made, StreamBase can store results and keep a record of how your algorithms have performed over time. In addition, by offering real-time alerting and trading visualization TIBCO StreamBase is ideal for rapidly building complete end-to-end algorithmic trading systems.

TIBCO StreamBase for Algorithmic Trading

As the volume and velocity of financial market data continues to soar, staying ahead of the competition requires the right trading tools and infrastructure. With TIBCO StreamBase, organizations gain superior speed, scalability, and value, surpassing conventional packaged infrastructures or traditional, custom-coded environments.

Using StreamBase, leading trading organizations track critical market conditions across multiple markets and instantaneously execute sophisticated strategies to capture short-lived trading opportunities.

With StreamBase you can:

• Improve trading strategies by using sophisticated time-based operations (for example, MACD, Bollinger Bands, RSI, OBV) and integrating real-time and historical data with ultra-low latency.
• Back-test new arbitrage or algorithmic trading models on historical data and immediately deploy them on real-time streams.
• Automatically look for the best price across multiple sources of liquidity in real time.
• Perform transaction cost analysis to monitor and tune algorithmic models.
• Manage risk exposure by tracking positions across all trading operations in real time.

To help today’s financial firms cope with increasing data volumes, market and regulatory complexities, time-to-market pressures, and competition, TIBCO StreamBase offers several critical advantages.
Attributes and Capabilities
Real-Time Data Streams and Historical Data
The TIBCO StreamBase event processing engine seamlessly integrates real-time data streams with previously stored data. As a result, back testing and analytics may be performed across terabytes of data.

High Data Volume and Low Latency Processing
StreamBase applications achieve performance levels measured at hundreds of thousands of messages per second by virtue of a unique inbound processing architecture that queries data as it streams through the system. Inbound processing applies business rules and rich application logic in real time to deliver results in-flight as they are produced, enabling significant speed and performance gains. These gains are further enhanced by a multithreaded architecture and a single time-sensitive process space.

Graphical, Integrated Development Environment
Rapid application development is enabled via TIBCO StreamBase Studio®, an Eclipse-based visual development environment (IDE) that provides tools for all stages of the development process, including design, test, and deployment.

TIBCO StreamBase Studio features include:
• Pre-built market data connectivity
• Streaming data record and playback functions
• Integrated debugger
• Test development and execution tools
• Performance monitoring tools
• Integrations with statistical computing languages including R, KX and MATLAB

Enterprise-Class Infrastructure
StreamBase runs on commodity hardware using Windows, Linux, or Sun Solaris and offers support for 64-bit operating systems. The software has been designed from the ground up for high availability and distributed operation, allowing scalability from a single-server to a multi-server clustered environment.

Stream-Based Programming with StreamSQL
StreamSQL is the next generation event processing language that extends industry-standard SQL to process over time- or event-based windows. StreamSQL operators perform a variety of functions including time-window aggregations, filters, computations, merging and combining of streams, and complex analytics.

StreamSQL also allows for reference to disk-stored data, management of stream imperfections (late, missing, or out-of-order data), and extensibility via expression logic or third-party defined operators and functions.
End-to-End Connectivity
StreamBase adapters include common market data feeds and services including:

- ACTIV Financial
- Bloomberg
- JMS messaging systems
- Lime Brokerage
- Thomson Reuters
- TIBCO Rendezvous®
- Other leading venues and exchanges

StreamBase offers connectivity to JDBC-compatible databases such as:

- IBM DB2
- Oracle
- Microsoft SQLServer
- Sybase

StreamBase also offers higher performance interfaces to high-capacity tick stores including:

- HP Vertica Analytical Database
- Thomson Reuters Velocity Analytics

StreamBase also readily connects to XML data, comma-separated-value (.csv) files, Microsoft Excel, and SMTP email systems.

Integration with Existing Systems
The TIBCO StreamBase platform integrates smoothly with your trading infrastructure, minimizing disruption to your existing architecture. StreamBase:

- Includes adapters to common messaging systems
- Integrates with OMS, EMS, or algorithmic trading systems through documented C++, .NET, and Java APIs
- Incorporates existing algorithms as Java or C++ plug-ins
- Connects with multiple FIX engines, including the StreamBase FIX engine to smoothly integrate with your existing market connectivity systems
- Offers application development via a business-friendly visual programming environment or via standards-orientated text language, StreamSQL
- Distributes load, allowing scalability from a single-server to a multi-server deployment
Platform, Standards, and Security

Application Programming Interfaces (APIs) for C++, Java, .NET

- Client API: used for building adapters that connect inputs and outputs to StreamBase
- Custom Function API: extends StreamBase functionality by supporting custom-built math and aggregate functions

Connectivity Examples

- ACTIV Financial
- Bloomberg
- FIX
- Interactive data
- JMS
- JDBC, flat files
- Lime Brokerage
- Solace Systems
- TIBCO Rendezvous
- Thomson Reuters
- Wombat
- Many FX venues and liquidity providers

Enterprise Functionality

- Clustering
- High availability
- Manageability
- Optimized for multi-core

Server Platforms

- Red Hat Enterprise Linux AS 4.0, 5.0, 6.0
- Novell SUSE Linux Enterprise Server 10
- Sun Solaris 10
- Windows Vista, Windows Server

Development Platforms

- Red Hat AS/AP 4.0, 5.0, 6.0
- Sun Solaris 10