

IBM WebSphere Front Office for Financial Markets: Benefit with fast, flexible market data distribution.



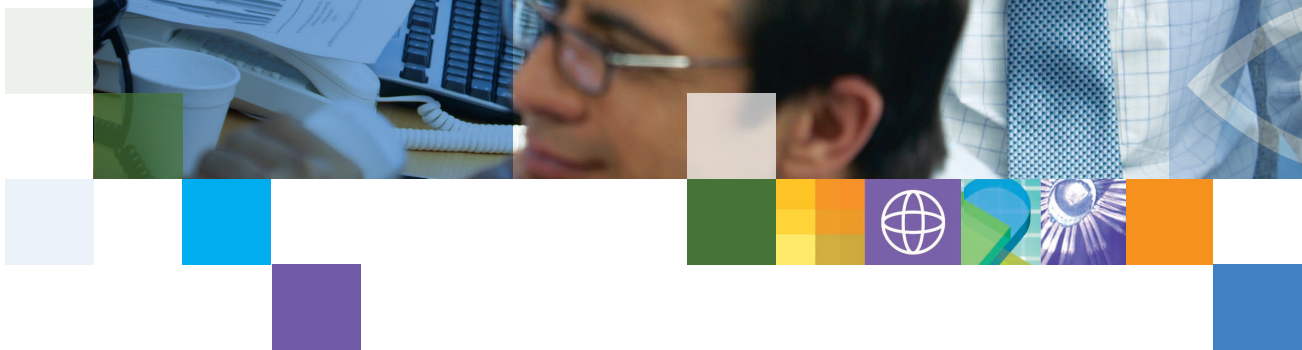
> DELIVER MARKET
DATA QUICKLY

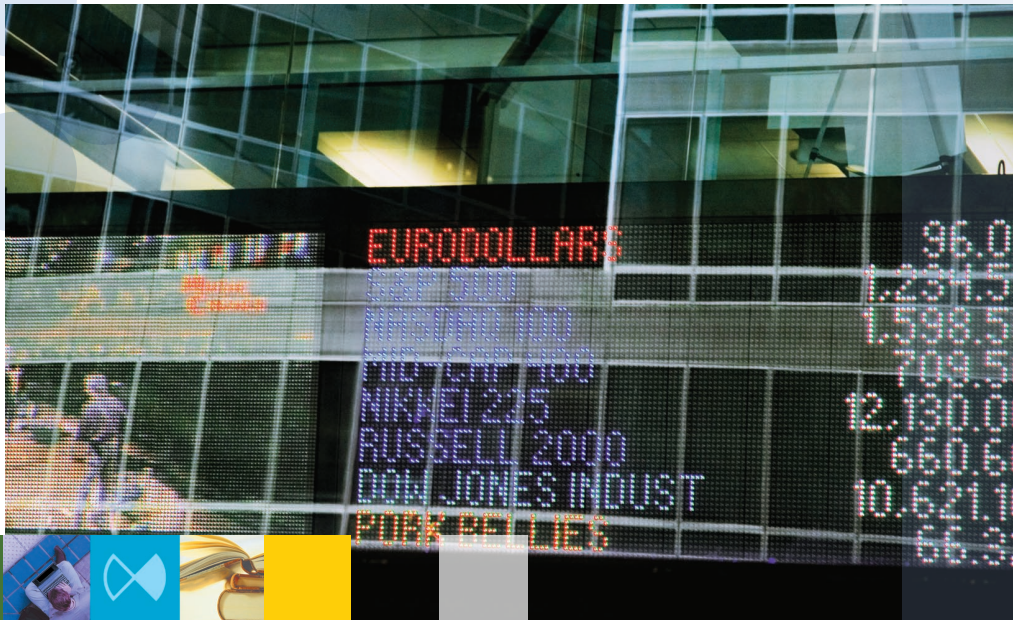
> RESPOND TO NEW MARKET
REGULATIONS

> INCREASE VALUE FROM
AUTOMATED TRADING

> CHOOSE THE DATA
YOU NEED

> INTRODUCE NEW
APPLICATIONS RAPIDLY





Stay ahead of your competitors using a rapid, reliable market data delivery platform

Capturing market data information and responding swiftly and intelligently to unpredictable fluctuations have always been essential for financial markets players. But the speed and data throughput required in acquiring and distributing market data have exploded. Accelerating peak market data volumes have increased almost fivefold in less than a year, while the industry's ballpark latency target plummeted from 250 milliseconds to one millisecond, or less.*

For more information on this solution, visit ibm.com/software/integration/wfo



Any delay in response to the market — even by microseconds — can now make the difference between beating the market and being punished by it. Firms with 24x7 global trading operations must automate to take advantage of market opportunities, but also to meet the fast-changing regulatory requirements — demonstrating “best execution” across multiple markets.

To execute trades faster than other firms and capitalize on the advantages of transparency across multiple markets, your market data delivery platform must efficiently capture real-time data, distribute it in a timely

manner, and store and retrieve time series data for analysis — all from information that is delivered in multiple formats and originates from disparate sources. Then, your technology must be able to rapidly and cost-effectively distribute the data to people and applications across your organization. Your platform must also enable you to fine-tune processes and functions, so you can reduce costs and efficiently deliver enhanced services that are in synch with the latest opportunities and market dynamics.

With IBM WebSphere® Front Office for Financial Markets — a high-speed market data delivery platform — you can receive both aggregated and direct-exchange data from external sources and deliver that data to machine-based trading and decision-support applications. Built to perform and meet the challenges that face the industry, the platform is grounded in patented technology from IBM Research. WebSphere Front Office for Financial Markets helps drive more effective front-office operations and enhanced competitiveness.

**Turn the page to
learn more about
how your firm can:**

- > Build an edge over competitors using patented IBM technology to effectively manage spiraling trade volumes and speeds**
- > Address compliance with regulations that require “best execution” across multiple markets**
- > Create a highly automated, adaptable end-to-end trading environment that integrates smoothly with front-office applications**
- > Leverage business-model flexibility to easily choose and deploy the most appropriate source of market data to meet your requirements — whether aggregated or direct exchange content**
- > Deliver dynamic functionality to front-, middle- and back-office applications quickly, easily and cost-effectively**



Gain speed and agility to support rapidly growing trade volumes

In a world increasingly dominated by complex, algorithmic and program trading applications, the ruler for measuring performance continues to shrink. As a result, firms using a standard market data delivery and front-office platform with latency measured in milliseconds cannot effectively compete with others who achieve latency measured in microseconds.

In a recent IBM survey of over 400 business leaders from 296 financial markets firms, new solutions to improve program trading and market data delivery were consistently cited among the top 10 uses for technology over the next 10 years. For example, in a program trading scenario in which a

firm sells a large block of stock, nimble firms that can react faster can beat their competitors to the most profitable opportunities. But in today's high-speed world, an opportunity may last only milliseconds. By the time a market data delivery system passes data to the program trading system, the opportunity may be gone.

Designed to help seize these fleeting opportunities, the comprehensive WebSphere Front Office for Financial Markets platform helps optimize high-volume electronic trading to give you a real-time edge in capturing market liquidity. The platform can process hundreds of thousands of events every second and transmit market data at submillisecond speed — enabling rapid price discovery and promoting enhanced decision making in the front office.

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Promote better
decision making

WebSphere Front Office for Financial Markets delivers exceptional performance for distributing market data through patented, innovative technologies developed by IBM Research and our financial services-focused software development lab. To speed delivery of information across the network, the platform transforms data into a compact, yet flexible form. And, it utilizes an innovative, high-speed messaging technique to synchronize information and reliably send market data to each application that needs it. It also protects against data loss and stores the current day's time-series information in memory to ensure high-speed response to queries and analysis.

Aggregate data and respond to best-execution regulations

To compete in today's financial markets and meet "best execution" and other performance requirements, firms need to compare — in real time — market data from multiple sources. But accomplishing this with today's platforms is slow and challenging.

WebSphere Front Office for Financial Markets includes a feed adapter framework that facilitates data feed blending. Feed adapters can blend real-time information from across multiple markets or exchanges, then automatically consolidate the data and send it in a standardized form to business applications.



Regulations being introduced around the world will require dealers and market makers to show that certain trades were executed at the best price possible across available quotes and marketplaces. In the U.S., the Regulation National Market System (Reg NMS) necessitates an audit trail for after-the-fact checking by buyers, sellers and regulatory bodies. European countries are enacting a similar, but broader Markets in Financial Instruments Directive (MiFID). WebSphere Front Office can feed data to applications that establish the best price for securities, facilitate smart order routing and verify that orders satisfy best-execution requirements to help support regulatory compliance efficiently and profitably.

For more information on this solution, visit
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Establish a rock-solid, end-to-end automated trading environment

To make the most of best-of-breed, global trading strategies and program trading that rely on computer-to-computer automation, a market data platform must deliver impeccable reliability and availability, and have built-in checks to avoid data loss. Today's firms can't afford even a one-second delay in front-office operations. Most firms struggle to keep up with continued exponential growth in message volumes, especially from feeds such as the Options Price Reporting Authority (OPRA). Market growth constantly pushes against capacity and performance limitations of existing platforms.

WebSphere Front Office for Financial Markets provides reliable, consistent delivery to consuming applications. Patented technology from IBM Research ensures that data is received in order. The technology also detects and retransmits missing data, and detects and suppresses duplicate data. To ensure uninterrupted service, the platform can rapidly identify — then automatically shut down and restart — a failing component. It then recovers the message stream in less than 500 milliseconds.

To assure automation readiness, the WebSphere Front Office for Financial Markets platform features the ability to:

- Smoothly and rapidly adjust to huge volume fluctuations.
- Reliably communicate with a variety of applications.
- Keep multiple components running without interruption or data loss.
- Continuously monitor IT health and send alerts about system changes to trigger manual intervention or automated responses.
- Utilize comprehensive metering capabilities to build detailed reports on market data usage by people and applications.

Address exchange usage requirements

Because firms must authenticate users and provide usage reports to providers, WebSphere Front Office for Financial Markets uses subscriptions and authorization checks to control access to third-party feeds and applications by groups, users and applications. You can easily access data stored by the product to create usage reports that satisfy exchange and market data vendor requirements.



Increasing market data speeds are “overwhelming to all but the most technically sophisticated and will force lagging firms to rebuild their market data infrastructure.”

– Tabb Group*

Accept market data through consolidated vendors, direct from exchanges, or both

Today firms use an array of front-office applications to perform a wide variety of business functions, often driving unique data requirements. Some use only direct data feeds, while others require the enhanced information provided by data aggregators. To thrive in today's climate, firms need to be able to add new data sources, easily mix and match services, and quickly build new applications with a powerful combination of capabilities.

Perhaps you need your developers to build an application that consumes blended streams of market data — such as consolidated order books and cross-market best bids and offers — and also includes multiple views by marketplace, market maker, price levels and orders. With literally hundreds of complex programming commands involved, building this application would require specialized skills and a hefty time investment.

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In contrast, WebSphere Front Office for Financial Markets enables you to express market data using common industry formats. The platform's application programming interface (API) is structured around two basic actions that work in conjunction with simple Extensible Markup Language (XML) to help users "get" the information they need from different places — and "put" it where they want, in a format they can use. So, rather than use a long string of complicated commands, developers can simply specify a request to "get IBM from the Bloomberg B-Pipe service [through the adapter included with the platform] and put it into this application."

The WebSphere platform can support any business-specific content — such as market data, trade transactions, news and composite data sets — and accepts a wide variety of feeds and content. Because it's easy to pick and choose how to receive and manage market information, WebSphere Front Office can help establish a more flexible business model that adapts readily to new requirements.



Deliver new functionality for front-office applications

To seize new business opportunities, investment managers and traders need a variety of functions integrated within their front-office applications. But with conventional market data platforms, your ability to customize market information — and build enhanced, market data-driven applications — is often limited, complex or costly.

Consider a large investment bank that obtains real-time direct feed access from a vendor. Locked into the vendor's formats and protocols, the bank has little control over how to share this information with internal applications. For example, although the information sent by the vendor for every tick is extensive, the bank application only needs 8 of the 40 fields the feed provides.





Today, changing the way this data is delivered might require a great deal of complex custom coding. But the flexible feed adapter framework of WebSphere Front Office for Financial Markets makes it easy to deliver only the specific eight fields needed to its business applications. Further, the bank could easily present this data in a specific order, while adding a field containing a custom-computed, volume-weighted average price to match its proprietary specifications. Because you can customize data models or compute and blend data as you'd like, you can manage trading operations and rapidly address client needs while adopting new trading strategies.

And, because of the simplicity of the WebSphere platform's API, developers can add new functions — or create new applications — in a fraction of the time otherwise required.



For more information

IBM is unique in its combination of unmatched financial markets industry experience, deep service orientation skills, unparalleled Business Partner network, and software and technology product excellence — and as a result, is a clear leader in service orientation. We can help you get started with service orientation, whether for the enterprise, a departmental initiative or a single project. IBM is the ideal resource for financial markets organizations seeking to meet the challenges of quickly capturing various types of real-time market data; adeptly transforming the information as needed; and sharing it efficiently across the organization to support traders, decision-making processes and back-end systems.

To review the recent IBM Institute for Business Value study entitled “The trader is dead, long live the trader! A financial markets renaissance,” visit ibm.com/services/fm2015

To learn more about WebSphere Front Office for Financial Markets, including technical specifications and ordering information, contact your IBM representative or IBM Business Partner, or visit ibm.com/software/integration/wfo

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*Tabb Group. “Wall Street & Technology — Seven Trends for '06.” January 2006.

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