



**Increase speed and flexibility and help minimize costs
with IBM middleware solutions.**



Middleware is Everywhere	Can you see it?
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Executive summary

Rapid change is inevitable in the financial markets industry. To succeed in today's business environment, financial markets organizations need to respond in real time to threats and opportunities, bring new products and services to market quickly and minimize operational costs across the enterprise. IBM offers a set of middleware solutions designed specifically to meet the unique challenges facing financial markets institutions.

Address challenges of the financial markets industry

The financial markets industry faces unique challenges. A fundamental shift — the increased “electronification” of financial markets. Since March 2000, daily trade volume on the NYSE and NASDAQ exchanges has increased by 13 percent. During that same time period the number of personnel handling these trades has decreased by 15 percent (see diagram on page 3), placing more importance than ever on effective IT systems. Similarly, the heightened expectation for automated, error-free post-trade processes — coupled with numerous other customer expectations for exceptional service across delivery channels — has forced financial markets institutions to seek out ways to minimize human intervention and errors through intelligent use of technology.

The rise in customer expectations is not limited to individual investors. The increasingly complex task of satisfying institutional clients, such as hedge funds and mutual funds, can be the most difficult challenge that financial markets institutions face. The need to provide efficient, reliable and differentiated services to these key customers keeps more than a few financial markets executives up at night.

As if these challenges weren't enough, financial markets institutions have the additional challenge of regulatory compliance. As markets have become increasingly global, the number of regulations that must be managed seems to have increased exponentially. In today's financial environment, global financial markets firms must comply with more than 20 national regulatory authorities — from the SEC, to Germany's Bundesbank, to Japan's Security Dealer's Association — and face potentially severe consequences for noncompliance.

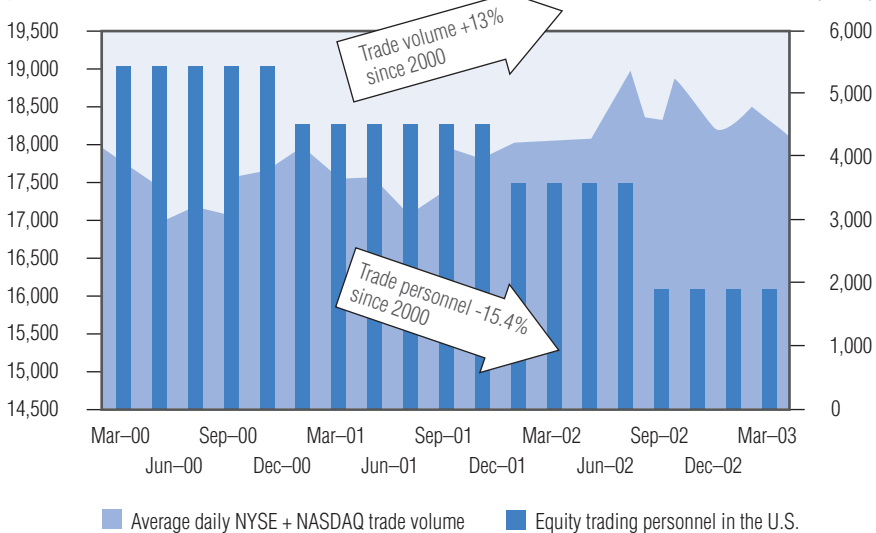
The pressure to meet these challenges quickly continues to rise, because increased competition has raised the stakes. Today's customer has more choices than ever before. If you cannot meet customer expectations, you will be up against a long line of companies waiting to prove that they can.

Electronic trading comes to the fore

As trade volume has picked up in the equity markets, there are fewer traders handling it.

Equity trading personnel in the U.S.

Average daily NYSE + NASDAQ trade volume (000's)



The rise of electronic trading
Source: TowerGroup*

IT infrastructure is at the heart of these issues. Companies need IT systems better aligned with business needs, but often struggle with silo-based systems that require duplicate expense and effort to maintain. These silo-based systems also make it difficult or impossible to gain an enterprise-wide business view. As a result, firms find it difficult to respond to change quickly and often find themselves exposed to unacceptable levels of security risks. The lack of a responsive and adaptive IT infrastructure can have an overarching, costly effect — causing you to lose focus on your customers.

IBM has developed middleware solutions to help financial markets organizations deal with today's prevalent issues — from trade and order management to regulatory compliance. These

solutions help you meet the specific challenges you face today while you protect your existing IT investments and establish a flexible foundation for future growth. This long-term flexibility is a key benefit of the IBM vision for financial markets organizations — on demand.

On demand aligns IT with business priorities

IBM defines on demand for the financial markets industry as the ability to align business priorities with IT to achieve enhanced flexibility and ultimately minimize costs. An on demand business is an enterprise whose business processes — integrated end to end across the company and with key partners, suppliers and customers — can respond with flexibility and speed to any customer demand, market opportunity or threat.



An on demand business requires an on demand operating environment — an IT infrastructure designed to specifically support your business goals. An on demand operating environment is an integrated platform, based on open standards, that enables you to rapidly deploy and integrate business applications and processes.

Charles Schwab’s methodology is business process-driven, with a “strong and obvious linkage between how the business operates and the software applications that support it as the result of IBM software. Each core business process is modeled end to end, looking across the whole value chain – encompassing customer, internal and third-party activities, whether these activities are automated or manual.”

— Tim Heier, Technical Director, Application, Infrastructure, Domains and Engineering (AIDE), Charles Schwab

The on demand operating environment provides two key functions that enable you to deliver IT capabilities on demand:

- *Integration – Connect people, processes and information in a way that allows companies to flexibly react to the dynamics of markets, customers and competitors around them.*
- *Infrastructure management – Create an infrastructure that’s easy to provision and manage by automating and creating a consolidated visibility of and access to available network resources.*

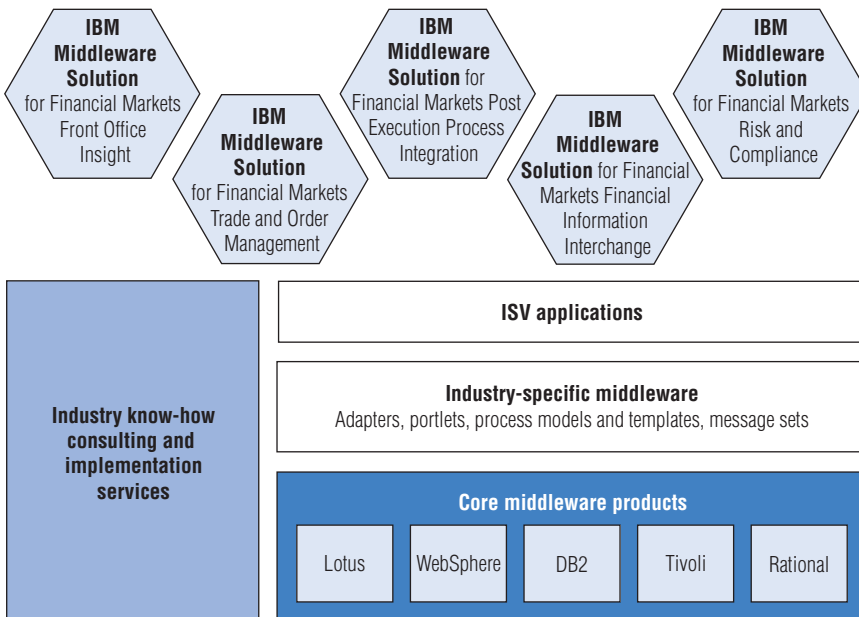
By creating coherence across your processes, applications and infrastructure, you can drive efficiency and visibility and put your focus back on your customers. In addition, the open and modular nature of the environment allows you to respond rapidly to your immediate needs while building a foundation for future growth.

By allowing you to consolidate and often avoid operational redundancies, an on demand operating environment can help you minimize IT management costs. Plus, an open environment can allow you to leverage the IT investments you’ve already made.

Introducing IBM Middleware Solutions for Financial Markets

IBM offers on demand middleware solutions to help you meet the specific challenges of the financial markets industry. IBM Middleware Solutions are customized combinations of IBM core middleware and industry-specific middleware that, when combined with application software from IBM’s network of independent software vendor partners and industry-specific services, enable customers to build an on demand operating environment.

IBM's middleware solutions offer an exceptional level of comprehensiveness. IBM's commitment to supporting open standards and a choice of platforms provide even greater flexibility.



Overview of a middleware solution

Core IBM Middleware Solutions for Financial Markets offerings include:

IBM Middleware Solution for Financial Markets Front Office Insight

Provides the portal-based integration you need to aggregate customer, product and market data in business processes. By helping avoid product silos, this solution enables you to efficiently manage your customer interactions.

By gaining a consolidated view of customer information and activity and using your knowledge of the customer to target sales approaches, you can maximize your service levels across touch points, your share of manageable assets and your trade volume.

Firms can integrate data and content in multiple formats, platforms and locations without having to move it or change the platform. These capabilities can be deployed to help you address a wide range of business needs including:

- Institutional sales trading – *Integrate existing market data, investment research, transaction data, sales, risk and customer intelligence systems for institutional sales. By making use of portal technologies, business process integration, federated data views and knowledge management technologies, capital markets firms can realize the value of existing assets while building next-generation sales systems. This approach enables you to maximize the productivity of sales teams, extract sales value from knowledge and data assets, and rationalize front-office systems without disrupting the business.*

- *Wealth management – Cater to retail and high-net-worth individuals with retail brokerage, financial advisory services, investment management and retirement planning. Drive profits and facilitate customer trust by offering advice, collaboration, planning and access to many varied products and services from multiple financial institutions. Leverage many of the same services and functionality, in a much more robust form, to service institutional clients.*

Delivering trusted advice, collaboration, access and planning to multiple constituencies can often result in application overload, and high development and support costs. The IBM Middleware Solution for Financial Markets Front Office Insight can help you implement a single, shared, resilient, security-rich and scalable infrastructure to rapidly build and deploy multiple portals that provide customers and partners with multichannel, global access.

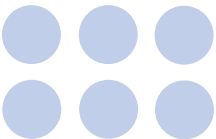
The IBM Middleware Solution for Financial Markets Front Office Insight helps you:

- *Service customers and increasingly complex products with an optimal amount of resources.*
- *Aggregate customer, product and market data in the context of customer-facing business processes.*
- *Maximize customer service to capture asset share of existing customers.*
- *Minimize costs and drive efficiencies by optimizing processes and infrastructure.*
- *Transform your legacy infrastructure.*

IBM Middleware Solution for Financial Markets Trade and Order Management

Offers capabilities that firms need to rationalize, scale and integrate their program-trading activities, as well as leverage their program-trading infrastructure to enhance customer service. Automated, rule-based response to rapidly changing market conditions helps you minimize the risk of human errors that negatively impact your organization — or your customers.

The solution works with an IBM Business Partner–provided analytical engine that helps you create, test and manage your trading strategies. The solution also offers Financial Information Exchange (FIX) connectivity and message handling to enable you to integrate order-management systems with middle- and back-office applications.



The IBM Middleware Solution for Financial Markets Trade and Order Management helps you:

- *Enable sophisticated trading strategies based on complex analyses of real-time data streams.*
- *Store, rapidly retrieve and analyze large quantities of real-time and historical, time-stamped pricing data.*
- *Integrate program trading activities with middle- and back-office processes.*
- *Offer program trading services to sophisticated institutional customers as well as for your own proprietary trading.*
- *Instantly identify and react to patterns to maximize revenue opportunities or minimize exposure.*

IBM Middleware Solution for Financial Markets Post Execution Process Integration

Helps you minimize trade-processing costs, reference data problems and manual

repair processes, so your firm can complete trades without exceptions and on time.

It integrates front-, middle- and back-office functions across applications, processes and workflows.

By enabling you to maximize the speed and accuracy of your operations — for example, providing real-time status of trade progress — this solution can help you enhance customer satisfaction. It also provides a high level of protection for your invaluable transaction data.

“Our integration solution, built on IBM middleware, has centralized securities trading and substantially improved the integration of the distributed systems in the branches. IBM is a leader in integration, and it guarantees long-term support. In the world of finance, the WebSphere MQ messaging platform is the standard for integration solutions.”

— Martin Frick, Head of Project and IT Architecture, Raiffeisen Group

The IBM Middleware Solution for Financial Markets Post Execution Process Integration includes application and information integration, business process management and access and collaboration capabilities that help sell-side firms, global custodians and large asset managers to:

- *Minimize failed trades and operational costs, and maximize automation and efficiency.*
- *Automate manual processes like handling trade allocations.*
- *Facilitate data consistency across applications.*

- *Manage human interventions to minimize trade failures.*
- *Provide up-to-the-minute status of progress towards trade settlement, minimizing operational risk.*
- *Properly manage risk of unauthorized access to high-value transaction data.*
- *Drive service levels, customer satisfaction and cost minimization.*

IBM Middleware Solution for Financial Markets Financial Information Interchange

Provides an enterprise network hub that enables you to consolidate your connectivity to multiple market infrastructures onto a single integrated platform. You can use standard messaging formats to seamlessly exchange payment, trading, settlement and security-instrument data with exchanges, Central Securities Depositories (CSDs), settlement agencies, outsourced service providers and more. Consolidating financial network access onto a network hub enables you to gain efficiencies by reusing hardware, integration software and human intellectual capital.

With advanced integration capabilities, this solution also helps your customers and employees manage and interact with the managed business processes. Ultimately, your firm can exert substantial control over business processes that involve multiple steps and interactions with the financial markets value chain.

For example, a firm can use the IBM Middleware Solution for Financial Markets Financial Information Interchange for clearing and settlement. This solution can help you:

- *Design, simulate and plan clearing and settlement processes.*
- *Create business processes, workflows and message routing to control and track settlement by instrument, counterparty, custodian and settlement location.*
- *Link settlement systems, global custodians, CSDs, central bank payment systems, internal accounting systems, netting applications and credit systems into a single business process.*
- *Consolidate connectivity to multiple market infrastructures – including SWIFT and non-SWIFT infrastructures – on a single network hub.*
- *Review, analyze and optimize processes and performance.*
- *Access a full data dictionary of ISO 15022-formatted clearing and settlement messages.*
- *Drive efficiency by avoiding manual steps and silo-driven processes that cause duplicate and error-prone data entry.*



IBM Middleware Solution for Financial Markets Risk and Compliance

Delivers the advanced information infrastructure required to help you address the evolving economic, regulatory and shareholder issues facing financial markets firms.

“We as a company – and we in the IT organization – are in a continuous cycle of adding new products and services, and we’re always being asked to do things faster, cheaper, better. Our recent experience with IBM WebSphere Application Server and IBM WebSphere MQSeries® have allowed us to do just that. We see IBM’s technology and depth of expertise as key strategic assets as we pursue emerging service opportunities in this dynamic sector.”

— Marg Williams, National Manager of Market Support, Australian Stock Exchange

Whether you need to comply with Basel II, Sarbanes-Oxley, SEC-17a or other cross-industry regulations or need to accurately measure credit risk when credit derivative volumes increase, this solution can help. It provides securities firms with capabilities to address the requirements of the point issue and integrate these processes with the overall enterprise risk and compliance management infrastructure.

In addition to the support that the solution provides to your compliance efforts, it can help you achieve new business efficiencies. You can gain centralized views of company-wide risk and compliance initiatives. And you

can perform advanced business modeling to test new processes before implementation. Ultimately, the solution can even provide a competitive advantage by enabling you to make well-informed, rapid decisions and drive customer confidence.

The IBM Middleware Solution for Financial Markets Risk and Compliance provides common data and services to assist in compliance with regulations that include:

- Broker, mutual fund trading and AML (Patriot Act) surveillance – *Sophisticated data mining and pattern detection techniques enable you to monitor customer suitability, broker selling practices and employee malfeasance. The solution, when paired with IBM Business Partner application functionality, can generate alerts for analysts and investigators about potentially problematic practices and behaviors. At the same time, it provides a context of business data and historical information that you can leverage to streamline analysis and resolution.*

- *Research compliance – NASD and NYSE rules governing investment research require strict governance over the process of publishing research reports. The solution enables access to and reuse of research materials and tracks who has had access to documents and information during the publishing process to help you meet your regulatory requirements. And by helping you manage and monitor the business processes associated with publishing investment research and facilitating content reuse, the solution aids optimization of research productivity – a critical factor as research budgets come under greater scrutiny.*
- *Data retention compliance – SEC- and NASD-regulated financial services firms require a highly secure, long-term content archival and retrieval system for their “books and records” that includes regulation-mandated monitoring tools. To help you meet SEC requirements, you can leverage the IBM Middleware Solution for Financial Markets Risk and Compliance to achieve high-volume, duplicate storage of e-mail, documents, instant messages and other forms of communication – plus powerful retrieval, auditing and reporting capabilities. To help comply with NASD regulations, the solution enables you to monitor incoming and outgoing electronic communications, perform statistical sampling and manage other surveillance methods.*
- *Enhanced risk management – The solution helps financial markets firms manage the information requirements associated with the Basel II Accord, such as recording, accessing, presenting and analyzing several years of customer and operational data in a rigorous, specific manner. Banks, for example, need the ability to evaluate the default rates of old loans to customers in a particular industry or geographic location. The IBM solution can help you trace the source of information your firm originally used to determine loan risk and correlate that information source with the outcomes of those transactions. Consequently, you can determine with precision how to lend money to similar banking customers in the future.*
- *Integration and internal controls – The Sarbanes-Oxley Act seeks to place more accountability on those who make decisions within publicly traded companies, emphasizing internal controls. In establishing a compliance program to assess and manage internal controls, a key step is tying together multiple repositories from different vendors. You can use the IBM Middleware Solution for Financial Markets Risk and Compliance to help you control content – by knowing where it is and managing it effectively. The solution capabilities include collaboration, workflow and integration, records management, enterprise content management, and security and privacy management.*

Components of IBM Middleware Solutions for Financial Markets

IBM Middleware Solutions for Financial Markets include:

Software

IBM DB2®— Database and data management solutions that help you access, store and analyze data more effectively

IBM Lotus® — Capture and apply essential knowledge, and collaborate in real time

IBM Rational®— Advanced software and system development tools

IBM Tivoli® — Intelligent management software to help you store, protect and provision your resources

IBM WebSphere® — Transaction management and integration solutions

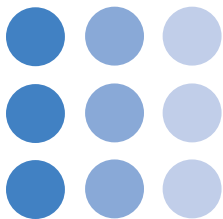
IBM Software Development Platform — A comprehensive, proven, open and modular set of development tools

IBM Business Partner applications extend the solution

IBM Middleware Solutions for Financial Markets offer a world-class foundation for your solutions, and applications provided by our extensive network of industry-focused ISVs complement the full solutions. IBM Business Partners provide leading industry-specific business applications that run on IBM middleware platforms.

Services

IBM services enable your financial markets organization to minimize risk and optimize deployment speed. Resources include:



- *IBM Business Consulting Services, with thousands of financial services practitioners*
 - *Strategy*
 - *Integration services*
 - *Business process re-engineering*
 - *Component business modeling*
- *IBM Financial Services Solution Centre*
- *IBM Software Services*
- *IBM Global Services Business Transformation Outsourcing*



Count on IBM

In the financial markets industry, your ability to respond rapidly and cost-effectively to change can mean the difference between success and failure.

Work with IBM to implement a middleware solution that can align your IT resources with your business needs, enhance your flexibility, increase customer satisfaction and minimize your long-term operating costs.

For more information

To learn more about IBM Middleware Solutions for Financial Markets, including case studies and more detailed information about solution components, call your sales representative or visit ibm.com/software/industries/financialmkts

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Software Group
Route 100
Somers, NY 10589
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* Source: TowerGroup, *2004 Perspectives: The Securities and Investments Industry Emerges from the Rubble — With Technology at Its Core*, December 2003