

# Reducing Complexity for Trading Speed and Efficiency



NYSE Technologies' single-server Trading-in-a-Box™ solution uses Intel Xeon Processor 7500 Series in an IBM System x3850 X5 system to drive down latency and complexity, while boosting the ability to find new market opportunities through real-time analytics.

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## Executive Summary

Capital markets firms are constantly looking for better solutions to deal with the ever-increasing amounts of data they must manage, while striving to attain the lowest possible latency and reduce complexity in the trading lifecycle across their extensive networks. NYSE Technologies, the commercial technology unit of NYSE Euronext and leading provider of end-to-end electronic trading solutions, set out to meet these requirements for its clients. NYSE Technologies' Trading-in-a-Box solution leverages advanced technology from industry leaders Intel and IBM in a solution that consolidates multiple tiers of a trading firm's servers into a single server, delivering lightning-fast messaging and analytics, thereby providing dramatic gains in efficiency, reductions in latency and increased productivity.

### CHALLENGES

- ➔ **Boost efficiency.** Improve ability to process large volumes of information at high rates, speed execution and reduce latency.
- ➔ **Reduce complexity.** Simplify tasks to make them easier, reduce errors and save costs.
- ➔ **Develop new trading strategies.** Empower financial services firms with new ways to find market opportunities.

### SOLUTION

NYSE Technologies' Trading-in-a-Box brings together NYSE Technologies' industry-leading software solutions with Intel™ Xeon™ Processor 7500 Series and IBM™ System x3850™ X5 64-core servers. The solution can be quickly and easily deployed in a liquidity-hub data center such as NYSE Euronext's in New Jersey or the UK.

### IMPACT

- ➔ **Improved efficiency.** NYSE Technologies' Trading-in-a-Box enables trading firms to collapse their algorithmic trading applications into a single server to allow for ultra-low latency while increasing scale to analyze ever greater amounts of data.
- ➔ **Decreased complexity.** The NYSE Technologies solution consolidates complex networks into a single server that delivers increased messaging speed and efficiency while reducing errors and diminishing overhead, all contributing to dramatic cost savings.
- ➔ **New ways to trade.** This technology provides a radically different approach to how firms traditionally deploy systems and allows for new types of analysis that can lead to new trading strategies.

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**NYSE Technologies wanted to offer** its trading clients a unique, state-of-the-art way to deal with the exponentially increasing amounts of market data they must process. It was essential that this new solution have the ability to consolidate the extensive – and expensive – multi-server networks that are common in today’s trading firms, while also lowering latency and boosting efficiency. NYSE Technologies’ Trading-in-a-Box solution centralizes all market data on one extremely powerful server. Firms that implement this solution enjoy previously unheard-of gains in efficiency and significant cost savings. At the same time, they take a giant step in the direction of the lowest latency.

“The point of having capital markets is to provide an efficient trading platform to people who want to invest money, or those who have a business they want to grow,” explains Feargal O’Sullivan, Head of Trading Solutions, Americas, NYSE Technologies. “Finding the best ways to trade and better ways of managing risk is what it’s all about. This sort of tool will help people find new ways to make the market more efficient. That’s good for the economy and good for everyone.”

### Performance Cores for High Performance Trading

In a complex environment, messages take time to travel via multiple servers and networks, introducing latency and overhead. There are more moving parts and a greater likelihood that something will go wrong along the way. NYSE Technologies’ single-server strategy means considerable reduction in complexity. Data has fewer “hops” to downstream subscriber components. The result is that data travels at significantly higher-speed, lowering latency, reducing errors and cutting costs.

“What’s great about this platform is that it’s all there.. and it does it all, and it does it much faster than ever before.”

— Feargal O’Sullivan,  
Head of Trading Solutions, Americas,  
NYSE Technologies

NYSE Technologies’ Trading-in-a-Box is an extremely flexible platform that enables capital markets firms to deploy the core components they need for a successful electronic trading platform. NYSE Technologies’ products are designed to be deployed and distributed in the standard network environment but they can also be easily collapsed and run on one machine. Capital markets firms can deploy the NYSE Technologies’ Trading-in-a-Box solution quickly and easily. The simple design allows the unit to fit in a standard server space, and it can be up and running in a matter of days.

According to one of NYSE Technologies’ major Chicago-based clients, “Getting all of our components onto a 32-core box reduced latency by nearly an order of magnitude while simultaneously reducing our data center footprint and hardware costs. Large multi-core boxes are clearly the future for our deployments.”

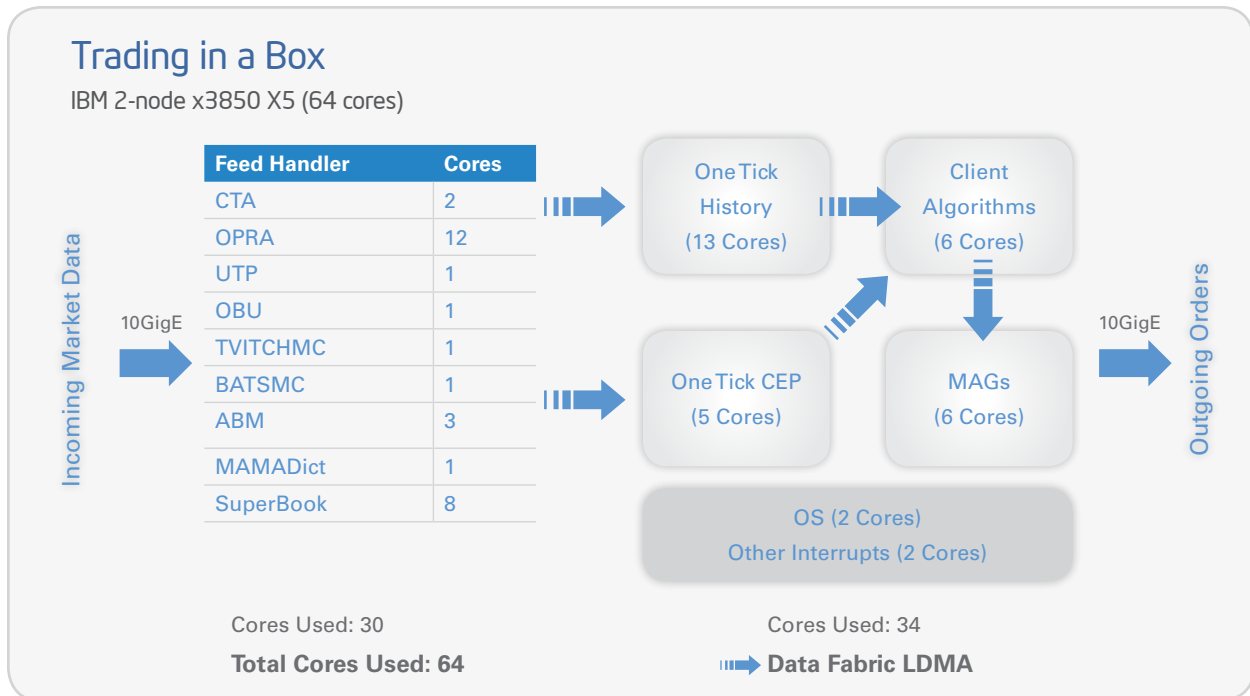
The NYSE Technologies’ solution enables capital markets firms to analyze their complete volume of information in new and different ways. Financial organizations typically subscribe to and run servers for each data source. NYSE Technologies’ Trading-in-a-Box writes information in memory on a single box. Because information is stored in RAM, financial firms can process a greater amount of information than ever before.

By leveraging NYSE Technologies’ Data Fabric™ Local Direct Memory Access, a high-throughput application messaging platform that enables financial firms to improve the performance of their mission-critical applications, NYSE Technologies components are able to communicate at very high speed on a single server.

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NYSE Technologies Market Data Platform V5™ feed handlers normalize the incoming market data with very low latency and pass the updates to SuperBook™ and to the tick capture and time-series offering, OneTick™. SuperBook builds a consolidated view of all open orders for stocks while OneTick captures the updates and stores them for historical processing. Meanwhile the OneTick Complex Event Processing Engine calculates a range of mathematical analytics, which are delivered to the Client's algorithmic engine along with the consolidated book from SuperBook. Finally, when the algorithm decides it's time to trade, it issues the order to the NYSE Technologies Market Access Gateway™ (MAG™) which converts the trade to the format required by the corresponding Trading Venue. All this communication is handled at sub-microsecond latency via NYSE Technologies' Data Fabric Local Direct Memory Access (LDMA) messaging platform.

### Advanced Technology from Industry Leaders

NYSE Technologies has long believed in developing software and leveraging Intel industry-standard servers.

NYSE Technologies' Trading-in-a-Box combines IBM's x3850 servers incorporating fifth-generation X-Architecture™ (eX5) technology, designed to significantly reduce IT infrastructure costs by reducing server sprawl, with eight 8-core Intel Xeon Processor 7500 Series to lend super-fast processing power. Intel's ability to deliver annual performance gains through the power of Moore's Law delivers the increases in performance required by NYSE Technologies' customers.

Intel lends the muscle for the powerful NYSE Technologies' Trading-in-a-Box solution with its revolutionary Intel Xeon Processor 7500 series. Intel Xeon Processor 7500 series-based servers can dramatically increase performance, efficiency and reliability. These servers are intelligent and extremely scalable, offering the industry's highest virtualization performance and support for more virtual machines per server. This means trading firms can run demanding applications while maintaining the peak load responsiveness they need.

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NYSE Technologies' Trading-in-a-Box runs on IBM's System x3850 X5 servers, which are capable of scaling from four to eight sockets with memory, storage and processing capacity to meet the demands of a business now and into the future. The eX5 is the fifth generation portfolio of IBM industry-leading technology in enterprise x86 computing. It expands Enterprise X-Architecture to IBM BladeCenter and provides two times the memory capability of competitive offerings, lowering software costs by up to two-thirds. The eX5 offers lower management and administrative costs and is the market share leader in scalable x86 servers.

"NYSE Technologies' use of the 64 high-performance cores in the IBM System x3850 X5 server is a new model for algorithmic trading. The x3850 X5 has been engineered to provide enterprise-class reliability, and compute and memory scalability, and we're excited to have NYSE Technologies create a new reference platform with it," says Dave Weber, Program Director, IBM Wall Street Center of Excellence.

NYSE Technologies' Trading-in-a-Box enables financial firms to devise additional strategies that they might not have come up with while they're running on separate servers, which can optimize trader performance and provide a competitive edge.

"What's great about this platform is that it's all there," O'Sullivan says. "On a single machine, you're running feed handlers for all the sources of data and you're storing the history of that data so you can compare in real time. You're running analytics, which are doing value-added calculations to decide what trends are in effect and which way share prices are going. You can compare the history with the real-time analytics to determine if it's a good time to buy or sell, all on one machine. It does it all, and it does it much faster than ever before."

### About NYSE Technologies

A division of NYSE Euronext (NYSE), NYSE Technologies provides comprehensive transaction, data and infrastructure services, and managed solutions for financial services firms requiring next-generation performance and expertise for mission critical and value-added client services.

With offices across the U.S., Europe and Asia, NYSE Technologies offers advanced integrated solutions for the global capital markets community, earning the ability to power trading operations for many of the world's best financial institutions and exchanges. For additional information visit [www.nyse.com/technologies](http://www.nyse.com/technologies).

### About Intel

Intel is the world leader in silicon innovation and collaborates with the financial services industry to deliver low latency, energy efficient solutions to meet the compute performance demands for information and growth. For additional information visit [www.intel.com/financialservices](http://www.intel.com/financialservices).

### About IBM

IBM System x enterprise servers represent the best of IBM X-Architecture™ technology, leveraging decades of mainframe server design to deliver an open and affordable, industry-standard server platform that can help tackle your most demanding workloads. For additional information visit [www.ibm.com/systems/x/hardware/enterprise/x3850x5](http://www.ibm.com/systems/x/hardware/enterprise/x3850x5).

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