

Data Fabric™

Breakthrough Middleware Performance

FAST FACTS

What is it?

NYSE Technologies' Data Fabric™ is a high-throughput application messaging platform.

Who is it for?

Financial institutions looking to improve the performance of mission-critical applications.

What does it provide?

High performance real-time data distribution – and the foundation for a new generation of business applications.

Demands on market data infrastructures within investment firms have increased in number and intensity, and the situation is set to continue. Market data volumes are growing at faster rates and processing systems are being forced to deal with the deluge of information that serves as input into today's trading decisions. Legacy systems are being strained, emphasizing the need for technological innovation.

Customer Challenges

As markets become increasingly electronic, and the need for speed intensifies, an improved market data solution is necessary: one that requires a smaller hardware footprint, enables flexible deployment scenarios, and reduces time to market for critical applications.

Today's market data systems need to demonstrate superior latency and throughput profiles if they are to add value. End-users are looking for help from a trusted supplier to handle this complexity and allow them to focus on their core business – defining and executing trading and investment strategies.

Growing Volumes of Data

Technology systems today face the challenge of handling ever increasing volumes of real-time data. For example, the Options Price Reporting Authority (OPRA) US options data feed hit a peak of 1.6 million messages per second in October 2009, and forecasts predict further rate increases. Market participants are under acute pressure to ensure their systems can withstand these kinds of volumes now and in the future.

Low Latency

In market data quote platforms and financial trading systems, micro-bursting of data (i.e. large quantities of simultaneous updates from many sources within a few microseconds) happens regularly, forcing standard IP-based middleware to buffer messages. This causes significant latency spikes and leads to message outliers. Micro-bursts of data updates can highlight bottlenecks across various parts of the trading system, especially in the I/O stack and the middleware.

Solution Benefits

NYSE Technologies' Data Fabric™ is a leading platform for low-latency, high-throughput application messaging. By fundamentally changing the approach to middleware, Data Fabric simultaneously benefits from, and maximizes the power of modern, multi-core CPUs with fast memory access.

Breakthrough Performance

Data Fabric, using industry standard hardware, offers significant throughput with lower latency than traditional low-latency IP-based middleware. The Data Fabric platform achieves breakthrough performance with low CPU overhead because it eliminates the need for CPU time to be spent on I/O. This enables business applications to do even more critical work, faster and with less data center real estate.

Unparalleled Speed and Throughput

From high-frequency trading to cloud computing, Data Fabric is unparalleled for real-time data distribution. Data Fabric is unique among market data middleware platforms in its ability to use Local Direct Memory Access (LDMA) and Remote Direct Memory Access (RMDA) to feed client applications at appreciably higher throughput and lower latency.

A New World of Ideas

Data Fabric opens your team to a whole new world of opportunities. The platform's unsurpassed performance uncovers possibilities that didn't exist before, unleashing your talent to create market-winning ideas, applications and strategies, giving your firm the competitive edge it needs.

A New Approach

NYSE Technologies' Data Fabric™ enables applications to leverage the CPU's multiple cores, without needing complex multi-threading code changes. Featuring both LDMA and RDMA capabilities, it seamlessly scales data intensive applications across multiple CPU-cores, as well as multiple machines.

Shared Memory – No Retransmissions

Data Fabric incorporates the revolutionary approach of a publish-and-subscribe, topic-based, application messaging platform that leverages Shared Memory Access. This unique design eliminates retransmission requests and multicast storms that occur on IP platforms when there are network issues, or when a subscriber is unable to process updates at the same rate as the publisher. By leveraging RDMA hardware acceleration to handle message delivery, Data Fabric also provides protection for the publisher from misbehaving subscribers.

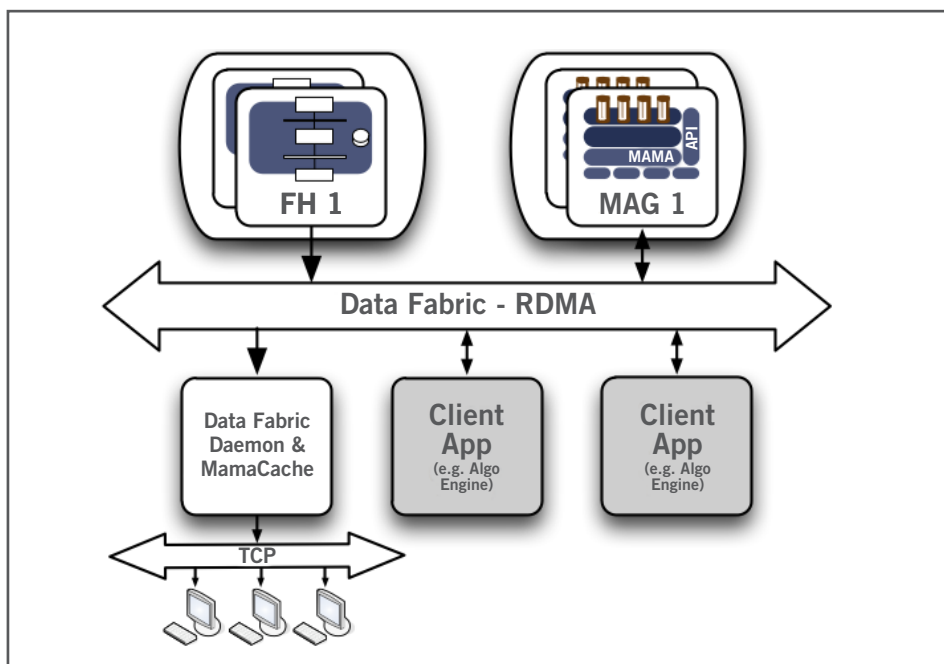
Flexibility and Choice

Data Fabric supports four message transportation types: LDMA; RDMA over 10Gigabit Ethernet; RDMA over InfiniBand; and direct TCP sockets. By employing the Data Fabric Daemon, clients can 'bridge' all of these transport types and filter traffic flowing between them, both locally and over a WAN. This flexibility allows architects and administrators to choose the ideal interconnection solution without requiring any code changes, and ensures the best performance possible regardless of the deployment choice.

Each transport method addresses a different performance goal:

- LDMA – trading venue co-location and other high latency sensitive applications
- RDMA – latency sensitive applications requiring processing across multiple servers
- TCP – efficient enterprise fan-out to servers and desktops where only traditional Ethernet is available

Diagram 1: Sample Data Fabric Deployment



Key Features

- Breakthrough application performance:
 - Over 8+ million 200 byte messages per second, with nanosecond latency when running one publisher application and five subscriber applications on a single, 8 core Intel Xeon 5500 server using Data Fabric's Local Direct Memory transport
 - Over 1.6 million 200 byte messages per second, with single-digit microsecond latency between two applications on two 8-core Intel Xeon 5500 servers, using Data Fabric's Infiniband Remote Direct Memory transport
- Flexible deployment options: LDMA, RDMA 10GigE, RDMA Infiniband, TCP
- Simplified application design and development: One API for all transports
- Predictable business application performance: 'Flat' latency curve
- Greater data center efficiency: Reduced CPU utilization

About NYSE Technologies

NYSE Technologies provides comprehensive transaction, data and infrastructure services and managed solutions for buy-side, sell-side and exchange communities that require next-generation performance and expertise for mission critical and value-added client services.

Find Out More

Contact our Trading Solutions team now.

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