

Data Fabric™

NYSE Technologies provides high-performance global trading platforms, through innovative market-leading software and a low-latency global secure networked community. Our flexible and scalable products deliver robust and integrated solutions for all market participants, from single traders to exchanges. From a single provider, these can be offered as fully deployed, hosted, managed or on-demand services.

At A Glance

- A fundamentally new messaging approach
- Millions of messages per second
- Single digit microsecond latency
- 'Flat' latency curve
- Enables far greater data center efficiency
- Multi-transport support at runtime
- Simple Pub/Sub API
- Bridging between transports
- Efficient multi-core performance
- Elimination of retransmissions

For more information on Data Fabric, please email trading-solutions@nyx.com or visit www.nyse.com/technologies

Rethinking Middleware with Shared Memory

The US Options market is the most demanding in the world when it comes to market data, with quote to trade ratios in excess of 5,000 to 1 and aggregate message rate bursts exceeding 800,000 messages per second on the OPRA feed alone. Participants in this market are under acute pressure to ensure their systems can withstand these volumes now and in the future.

NYSE Technologies' high performance middleware product, Data Fabric, by fundamentally changing the approach to messaging, offers an order of magnitude improvement in performance in terms of latency and throughput over traditional low-latency IP middlewares, and makes this performance available through an easy to use, generic publish and subscribe API using commodity hardware. Its breakthrough performance is achieved by eliminating many of the bottlenecks that plague traditional IP middleware offerings and by leveraging hardware acceleration afforded by standard network adapters.

Breakthrough Performance

Latency (including latency volatility) and throughput are critical performance dimensions within the trading ecosystem which, until Data Fabric, the market typically had to trade one off against the other. Consistent latency is a vital ingredient for any messaging system and often the furthest outlier is a key benchmark of performance. Similarly within the matching system of a trading venue, the ability to acknowledge, match and disseminate order information quickly while taking trading surges in its stride is critical to the competitiveness of that venue.

These same middleware bottlenecks are voracious consumers of CPU, and subsequent power and cooling in today's data center. By forgoing any need for I/O CPU, Data Fabric allows you to do much more critical work with your precious data center real estate. With Data Fabric, your data center spend goes further than previously possible.

Choice of Transports

By offering a range of transports (LDMA, RDMA and TCP) and bridges between those transports, it is possible to select the most appropriate tool for the task at hand and to architect flexible solutions delivering the optimum performance, all using the same simple yet powerful API.

LDMA Transport

The Local Direct Memory Access (LDMA) transport provides single digit microsecond latency between processes on the same machine without any use of the I/O stack. This becomes more interesting when you consider the industry trend to provide processors with additional cores rather than higher clock frequencies. 16, 24 and 32 core systems are commodity items, with many-core systems on the near horizon. The prospect of needing only one machine for a problem is becoming a reality.

RDMA Transport

The Remote Direct Memory Access (RDMA) transport, by using the RDMA capabilities of network interconnect technologies, extends the power of Data Fabric to process across many machines. This provides an option to scale applications beyond a single machine while maintaining the ultra low latency and latency variability characteristics of Data Fabric.

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