

GC pause-free Java applications through orchestrated memory management

Cinnober reveals innovation that improves latency predictability in its high-speed trading and clearing system solutions

Cinnober is a leading, independent supplier of trading, clearing and surveillance technology to the financial industry, including exchanges, clearinghouses and banks.

The company has previously published several white papers on latency, as well as about the benefits of using Java as a high-performance language for mission-critical financial applications (<http://www.cinnober.com/whitepapers>).

In a new report, Cinnober now presents an innovation that altogether eliminates application jitter related to Java's memory management, so-called garbage collection (GC). The result will primarily be better response time predictability by removing the latency tail, but also lower average latency.

The new innovation will be included in the next version of Cinnober's TRADExpress Platform, and available to current and new customers in the second quarter of 2014.

However exceedingly small impact the GC jitter has on average latency – it only affects a very small fraction of the transactions – it is still unwelcome, since it adds a certain degree of latency unpredictability for high frequency traders.

Cinnober now incorporates its Ultra communication framework, previously only available in TRADExpress Ultra, into its generic TRADExpress Platform, the fundament of all its system solutions. This, in combination with orchestrated memory management over an active server pair for business logic, removes the effects of GC jitter and achieves pause-free execution. The new solution does not demand any additional hardware.

"This innovation really captures the best of two worlds; it enables extremely low and predictable latency while not compromising the richness and sophistication of system functionality at all," says Veronica Augustsson, CEO of Cinnober. "We constantly improve our TRADExpress platform, and this innovation will have noticeable impact on latency predictability and system speed for our trading, risk and clearing system customers."

Two years ago, Cinnober launched TRADExpress Ultra, a streamlined, ultra-fast trading system primarily targeting markets where latency is absolutely critical. It offers single-digit microsecond latency (average door-to-door). TRADExpress Ultra has a minimalistic design with efficiency as the chief guiding principle; while being a fully redundant solution, the functionality offered in the system is highly streamlined. One of the key features of TRADExpress Ultra is that it is free of memory turnover and associated GC.

Cinnober has since then decisively incorporated features from TRADExpress Ultra into TRADExpress Platform, the platform for Cinnober's product portfolio. With this latest leverage of the Ultra technology, Cinnober sets a new stage for its entire product portfolio in terms of low and predictable latency.

The new report *Predictable latency - Cinnober on: GC pause-free Java applications through orchestrated memory management* is available to download at <http://www.cinnober.com/whitepapers>.

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About Cinnober Financial Technology AB

Cinnober provides solutions and services to leading trading and clearing venues, including exchanges, clearinghouses, banks and brokers. Cinnober's solutions are based on the TRADExpress™ Platform incorporating everything needed for mission-critical solutions in terms of performance, robustness and flexibility. The portfolio of offerings includes price discovery and matching, real-time risk management, clearing and settlement, index calculation, data distribution and surveillance. Cinnober's surveillance offering is powered by technology from Scila AB. Cinnober's customers include BM&FBOVESPA, Deutsche Börse, Dubai Gold & Commodities Exchange, Eurex, London Metal Exchange, LME Clear, Markit BOAT, MarkitSERV, NYSE Liffe and Stock Exchange of Thailand. For additional information, please visit www.cinnober.com