Oracle, Intel and Orc Software Reduce FIX Protocol Latency by 91%

The FIX protocol has become the de-facto standard for electronic trading. The ability to provide consistent latency performance at the 99.995 percentile under extreme loads is a key differentiator between electronic trading partners such as exchanges and brokers. Oracle and Orc Software have partnered to deliver a FIX solution that reduces latency while under extreme load.

JRockit Real Time is a standard Java Runtime Environment (JRE) that provides consistent low latency for any Java application. JRockit Real Time addresses a key source of latency with a unique garbage collection algorithm. This benchmark demonstrates how Orc's CameronFIX engine, when combined with JRockit Real Time, delivers sub-millisecond latencies while reducing latency spikes from 77 milliseconds using a competitor JVM to under 7 milliseconds. JRockit Real Time on the Sun X4450 provided a 91% reduction in latency at the 99.995 percentile.

The Application

Orc Software provides Orc CameronFIX, a market-leading FIX engine used by exchanges, brokers and the buy-side for high-performance FIX connectivity. The results demonstrated that JRockit Real Time reduced outlier latency to 6.48ms at the 99.995 percentile and < 1ms at the median in a high-volume FIX messaging environment.
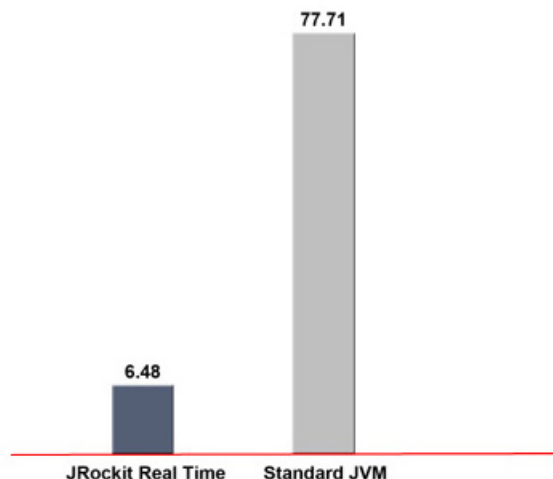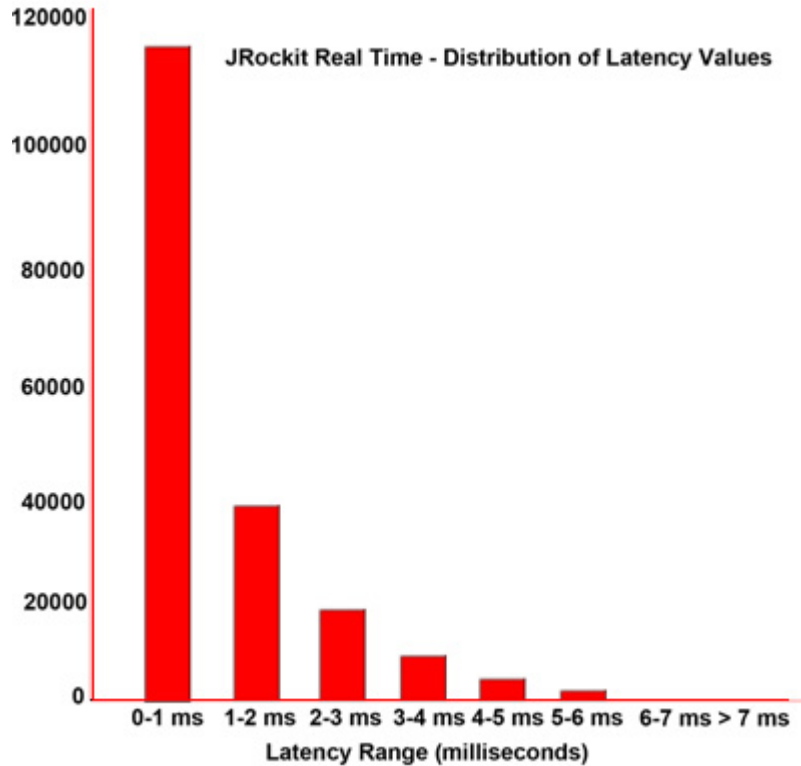
Test Environment

The hardware used in the testing consists of one machine for the FIX engine and one machine for the load generator. The hardware configuration and software stack are as described below:

- Sun X4450 Platform

- 4 Intel® Xeon® processor 7350, 2.93 GHz, quad-core

- 8 MB L2 cache per processor, shared across the 4 cores 32 GB RAM

- OS: Red Hat Enterprise Linux 4.1.2-14.

- JVM: JRockit Real Time 2.0

- FIX Engine: CameronFIX 6.2

Comparison of 99.995 Percentile Latencies

Oracle and Intel—Uniquely Positioned for Low Latency

JRockit Real Time is a standard Java Runtime Environment (JRE) that runs best on Intel quad-core processors. The latency solution builds on the hardened optimized stack jointly developed by Intel and Oracle. The joint solution has been in production for more than five years. It has been winning the SPEC JBB benchmarks over the last three years.

JRockit Real Time - Distribution of Latency Values

(Bar chart: y-axis 0 to 120000, x-axis Latency Range (milliseconds): 0-1 ms ≈ 115000, 1-2 ms ≈ 39000, 2-3 ms ≈ 18000, 3-4 ms ≈ 9000, 4-5 ms ≈ 4000, 5-6 ms ≈ 2000, 6-7 ms ≈ 0, > 7 ms ≈ 0)

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