



Industry Load Testing Report Summary

April 6th 2018 08:00 UTC to April 7th 2018 08:00 UTC

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Date: 20th April 2018**

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Revision History

Version	Date	Reason
1.0	20 th April 2018	Initial Report



1 PREFACE

Since DSB go-live on 2nd October, the DSB system encountered 3 production outages of 12mins, 99 mins and 21 mins in each of January, February and March respectively. In order to address the root cause of these stability issues, the DSB has embarked on a rapid development effort to address internal bottlenecks in both internally developed software and that supplied by its vendors. This work culminated in the promotion of a new codebase into UAT, on the 10th March 2018 and a subsequent refinement on the 26th of March 2018.

A more detailed explanation of the approach taken is described on the ANNA DSB website here: <https://www.anna-dsb.com/2018/03/30/dsb-technology-preparations-for-industry-load-test/>

In order to expedite the deployment of the new codebase into Production, the DSB arranged an Industry Load Test against the new code in its UAT environment. This testing was conducted via a number of 8-hour windows where DSB users were encouraged to exercise their own test harnesses up to their usage limits to validate the new codebase. This document focuses specifically on the windows between 08:00 UTC 06 April 2018 and 08:00 UC 7th April 2018, where sustained usage was highest.

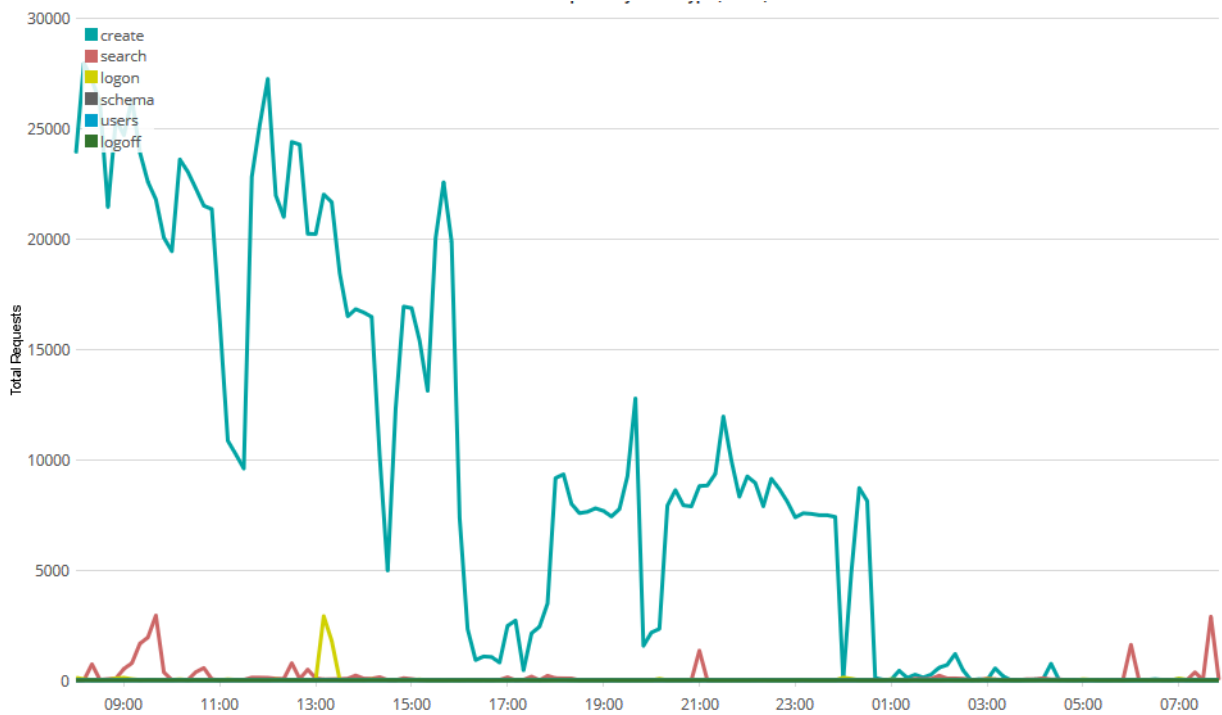
This report details the result of the industry load test.

2 OVERALL ACTIVITY THROUGHOUT LOAD TEST

2.1 REQUESTS BY EVENT TYPE.

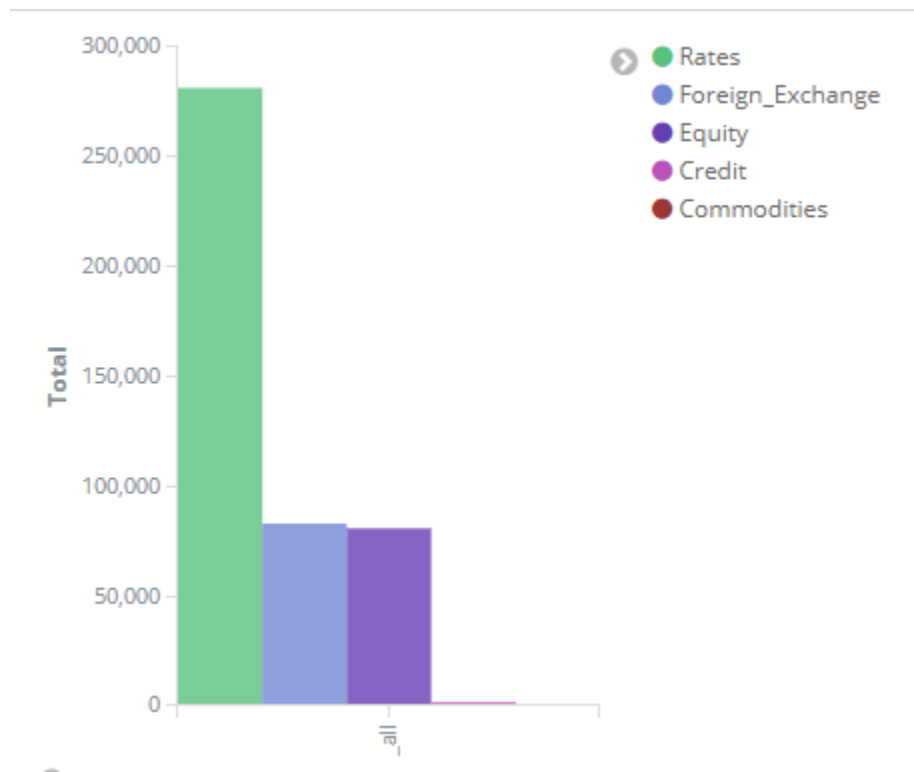
Overall clients focused on the most strenuous aspect of the ISIN Engine service, creating ISINs by way of “Create Requests” by a large margin.

Number of Engine events (10m interval across 24 hours).



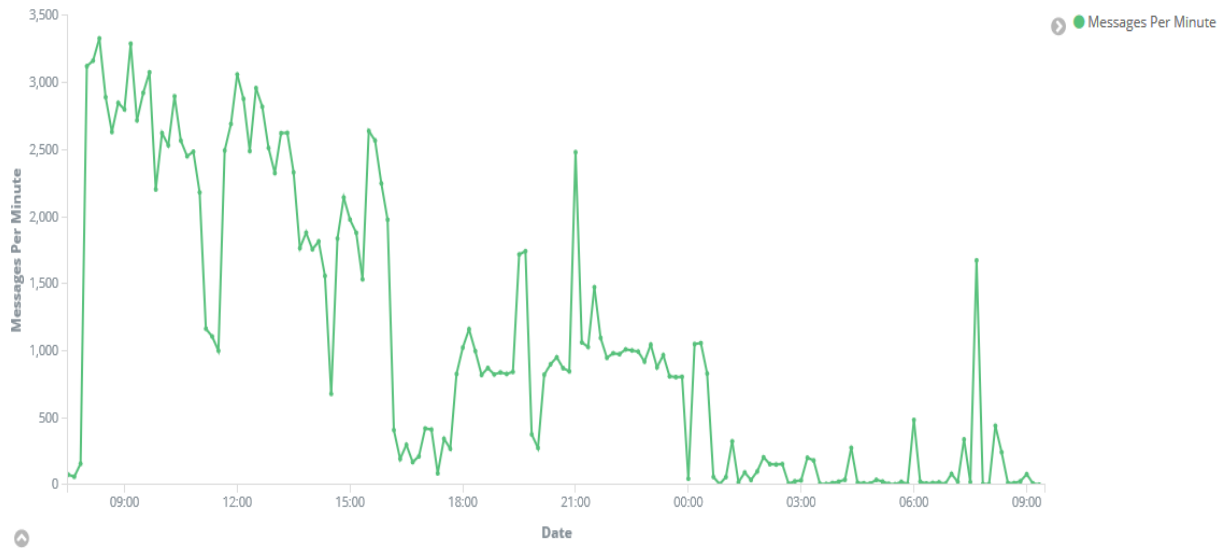
2.2 CREATION BY ASSET CLASS

Actual creation of ISINs was predominantly Rates, followed almost equally with FX and Equities.



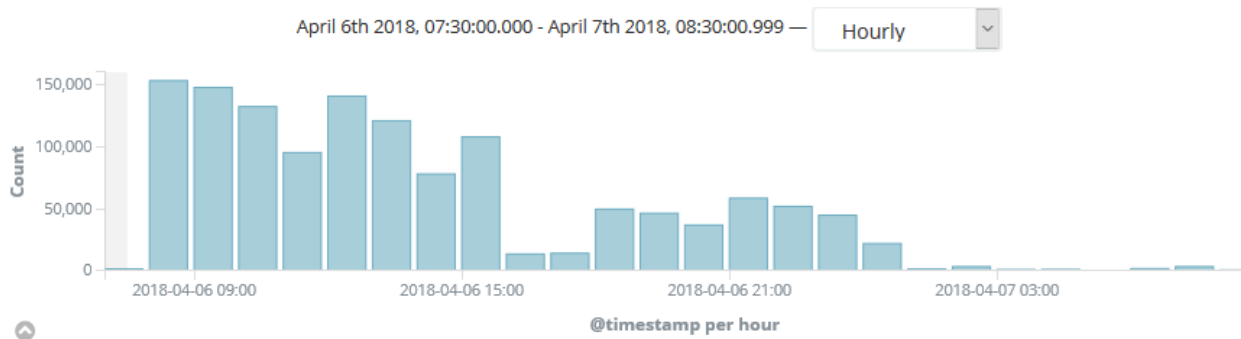
2.3 CORE MESSAGES PER MINUTE

Processing of user requests per minute within the ISIN Engine core.



2.4 EVENT ACTIVITY IN CORE

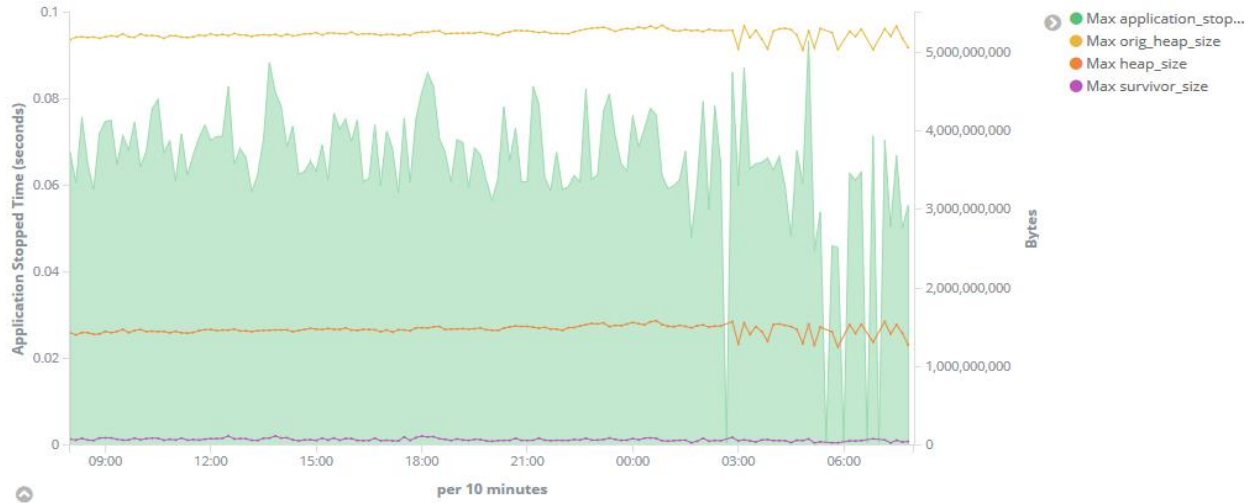
Internal event counts across all activity within the Engine core.



3 GARBAGE COLLECTION STATISTICS

As referenced in our Tech blog (<https://www.anna-dsb.com/2018/03/30/dsb-technology-preparations-for-industry-load-test/>), a significant focus of the work on the new codebase was the tuning and optimization of object creation in order to minimize Java Garbage Collection.

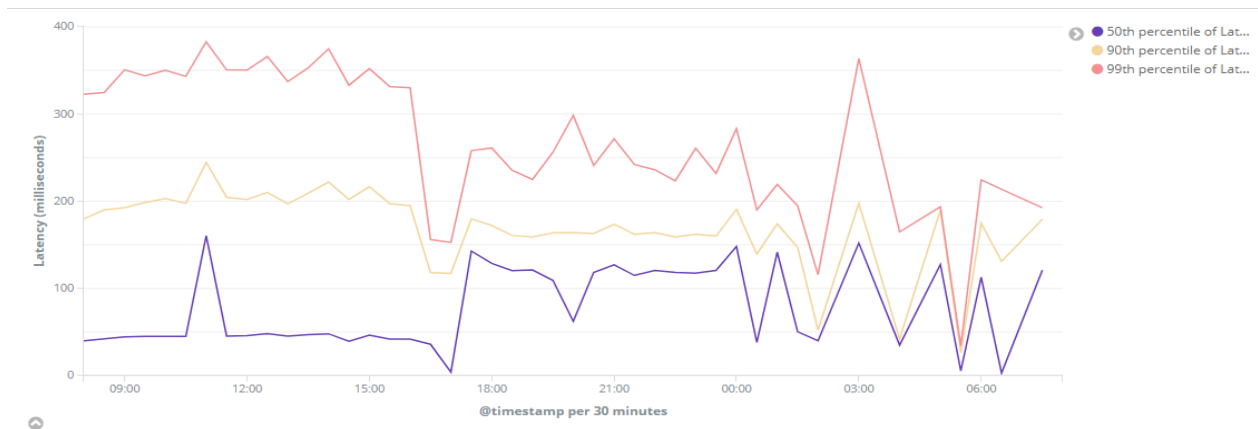
The below results are for the component (<http://lucene.apache.org/solr/>) that caused the production stability issues. The chart shows flat memory utilization resulting in consistently low GC pause times of under 100ms.



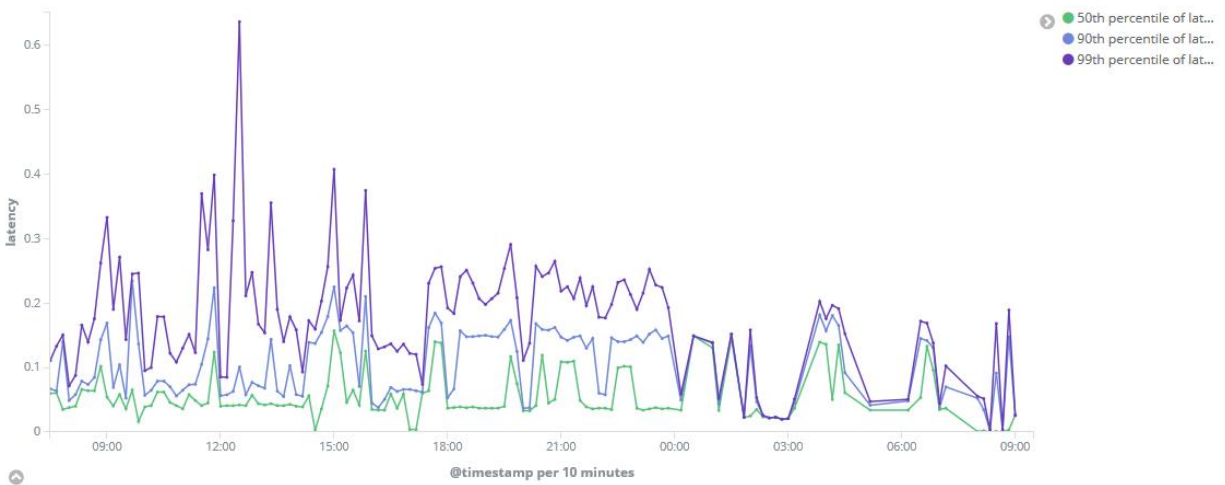
4 LATENCY

The DSB aspires to a 1,000 millisecond latency for 99% of its API messages (FIX and REST). The below charts show that latency measure throughout the Load Test windows was well within target.

4.1 FIX LATENCY (CREATE REQUESTS)



4.2 REST LATENCY (CREATE REQUESTS)



5 CONCLUSIONS

The industry load test demonstrated behavior consistent with the published SLAs whilst encountering no stability issues during the periods of maximum load. Furthermore, users experienced predictable and deterministic performance for create requests. In light of this, the DSB intends to promote this codebase to Production as soon as is technically feasible.