

# ACHIEVING CONSISTENT LOW LATENCY WITH ZING

Why fast-paced Businesses Need Consistent Low Latency



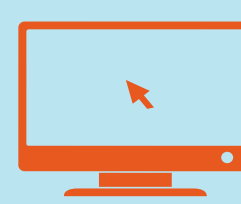
## REAL TIME JAVA-BASED BUSINESS SECTORS SUCH AS



CAPITAL MARKETS



WIRELESS SERVICE PROVIDERS



ONLINE ADVERTISING NETWORKS

## NEED CONSISTENT LOW LATENCY FOR

MACHINE-MACHINE RESPONSE TIMES

ELIMINATION OF JITTER AND SYSTEM STALLS

IN-MEMORY ACCESS TO REAL-TIME INFORMATION

SYNCHRONOUS TASK MANAGEMENT

## WHY LEGACY JVMs CANNOT DELIVER CONSISTENT LOW LATENCY

### LEGACY JVMs HAVE INHERENT PERFORMANCE INHIBITORS

- FULL GC PAUSES ARE GENERALLY NOT AN ISSUE FOR LOW-LATENCY JAVA APPLICATIONS
- YOUNG GEN/MINOR GC PAUSES CANNOT BE COMPLETELY ELIMINATED
- MINOR GC WILL "STOP THE WORLD" FOR A FEW MILLISECONDS
- THESE PAUSES START IMPACTING PERFORMANCE BEFORE THE 99TH PERCENTILE

### WHAT THIS MEANS FOR REAL TIME BUSINESSES

- USER SESSION TIME-OUTS
- DELAYED TRANSACTIONS
- DETERIORATION OF APPLICATION THROUGHPUT
- MISSED OPPORTUNITIES AND REVENUE LOSS



## JVM TUNING CANNOT COMPLETELY RESOLVE THE ISSUE

### LIMITATIONS OF REGULAR JVM TUNING

- CAN ONLY DELAY, NOT PREVENT YOUNG GEN COLLECTION AND PAUSES
- LOWERS PRODUCTIVITY OF DEVELOPERS, QA AND TEST TEAMS
- VULNERABLE TO MANUAL ERRORS
- HIGH ONGOING COSTS OF CONTINUOUS RE-TUNING
- RETUNING IS OFTEN REQUIRED WHEN WORKLOADS CHANGE
- RETUNING REQUIRED FOR CHANGES IN APPLICATION FEATURES

## HOW AZUL SYSTEMS ZING® DELIVERS CONSISTENT LOW LATENCY

Zing® has built-in features that change the way memory allocation and garbage collection are conducted

### C4 COLLECTOR

- CONCURRENT COLLECTION FROM YOUNG AND OLD GENERATIONS OF OBJECTS
- CONCURRENTLY COMPACTING TO ELIMINATE MONOLITHIC PAUSES
- PAUSELESS GC EVEN UNDER PEAK LOADS
- REDUCES JITTER
- NO FALLBACK TO "STOP THE WORLD" FOR YOUNG OR OLD GEN COLLECTION

### SIMPLIFIED TUNING

- CONSISTENTLY ACHIEVE MILLISECOND-LEVEL RESPONSE TIMES WITHOUT TUNING
- FREES UP DEVELOPERS
- ENABLES WORST CASE RESPONSE TIMES UNDER ONE MILLISECOND
- FEWER TUNING FLAGS – LESS CHANCE FOR CONFIGURATION ERROR

## THE ZING® ADVANTAGE

### DECREASED

TIME TO MARKET DUE TO IMPROVED DEVELOPER PRODUCTIVITY AND REDUCED TUNING TIMES

SYSTEM STALLS -- C4 COLLECTOR MAKES GC PAUSES A NON-EVENT

JAVA JITTER: ORDERS-OF-MAGNITUDE LOWER PEAK LATENCY

### INCREASED

COST SAVINGS VIA BETTER UTILIZATION OF EXISTING HARDWARE RESOURCES

PRODUCTIVITY OF DEVELOPERS VIA REDUCED NEED FOR JVM TUNING

CUSTOMER SATISFACTION WITH REDUCED SYSTEM STALLS, AND FASTER RESPONSE TIMES

ZING HELPS YOU GET MORE OUT OF JAVA

DISCOVER ZING



Contact Azul Systems at:

CALL US  
+1.650.230.6500

EMAIL US  
info@azul.com

ON THE WEB  
azul.com

Java and Hotspot are trademarks or registered trademarks of Oracle and/or its affiliated companies. All other trademarks are the property of their respective holders.

© 2017 Azul Systems Inc.