

# A Thorough Look at Krati vs. BDB JE

A Comparison of Throughput, Latency and GC

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# Test Configuration

- Test
  - Key size: 30 - 36 bytes
  - Key count: 2,500,000
  - Value size: 0.5-2 KB, Avg. 1 KB
  - Random read
  - Random write
- Krati
  - SimpleDataStore with MemorySegment
  - DynamicDataStore with MemorySegment
- BDB JE
  - Java JVM: -server -Xmx16G
  - Cache Size 8G (je.maxMemoryPercent=50)
  - Transactional
  - NoTxnSync

# Performance - Krati vs. BDB JE

Krati SimpleDataStore with MemorySegment

	Populate	Write Only	Read Only	Read & Write
put	15-20/ms	15-20/ms		15-20/ms
get			200 /reader/ms	200 /reader/ms

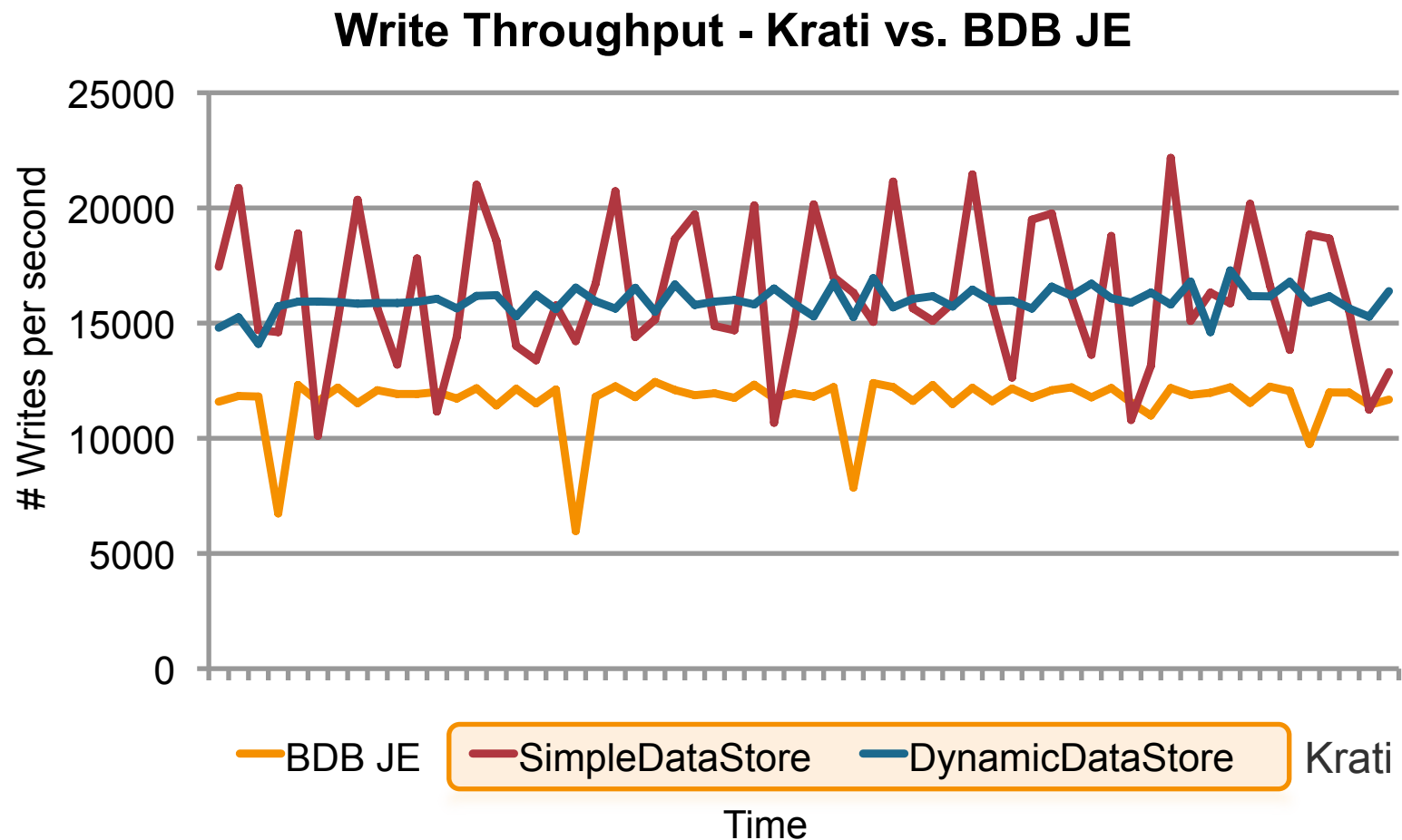
Krati DynamicDataStore with MemorySegment (initLevel=2)

	Populate	Write Only	Read Only	Read & Write
put	5-10/ms	10-20/ms		10-20/ms
get			175-200 /reader/ms	175-200 /reader/ms

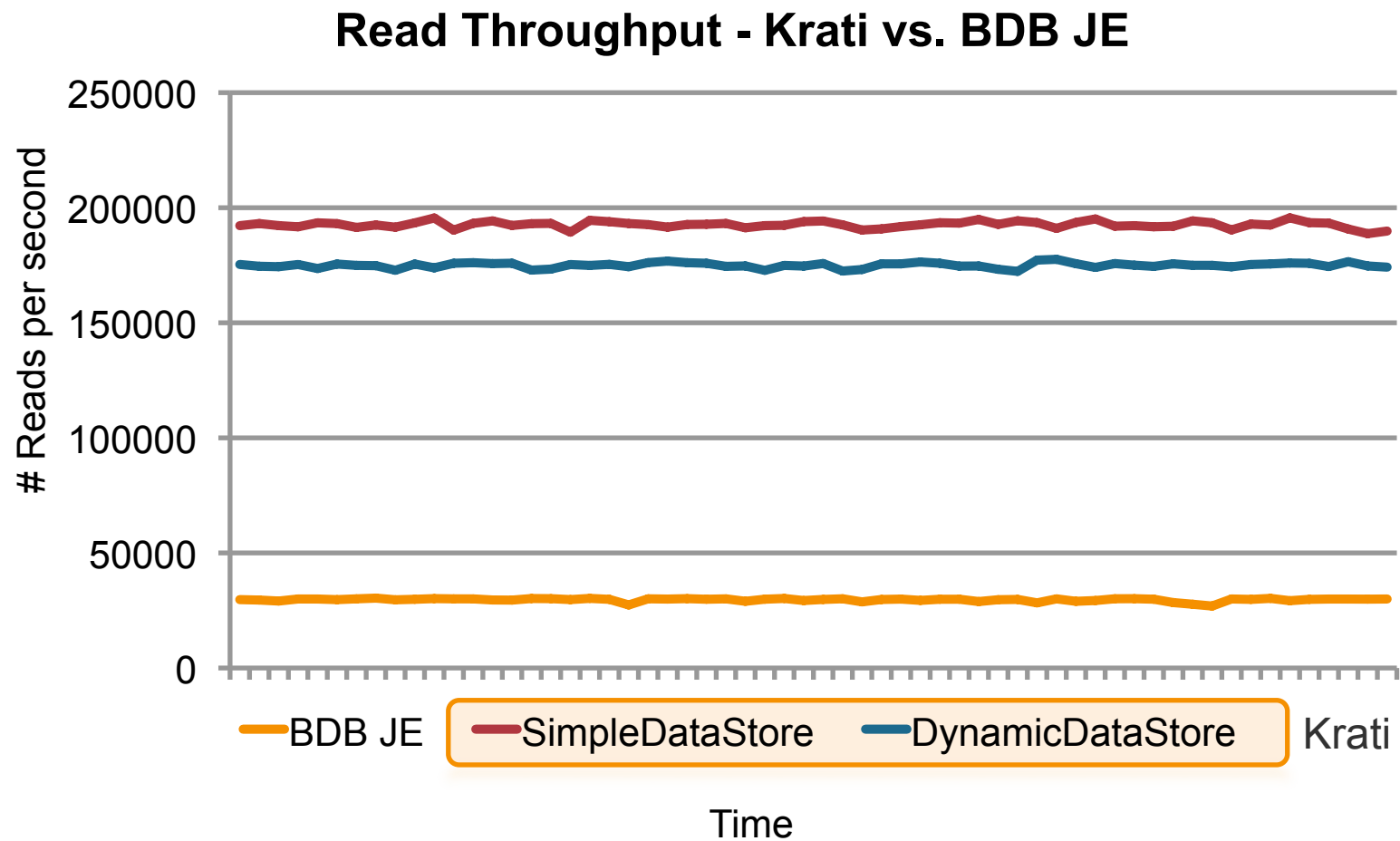
BDB JE StoredMap (Cache Size 8G, Transactional, NoTxnSync)

	Populate	Write Only	Read Only	Read & Write
put	15-20/ms	10-15/ms		10-15/ms
get			45 /reader/ms	45 /reader/ms

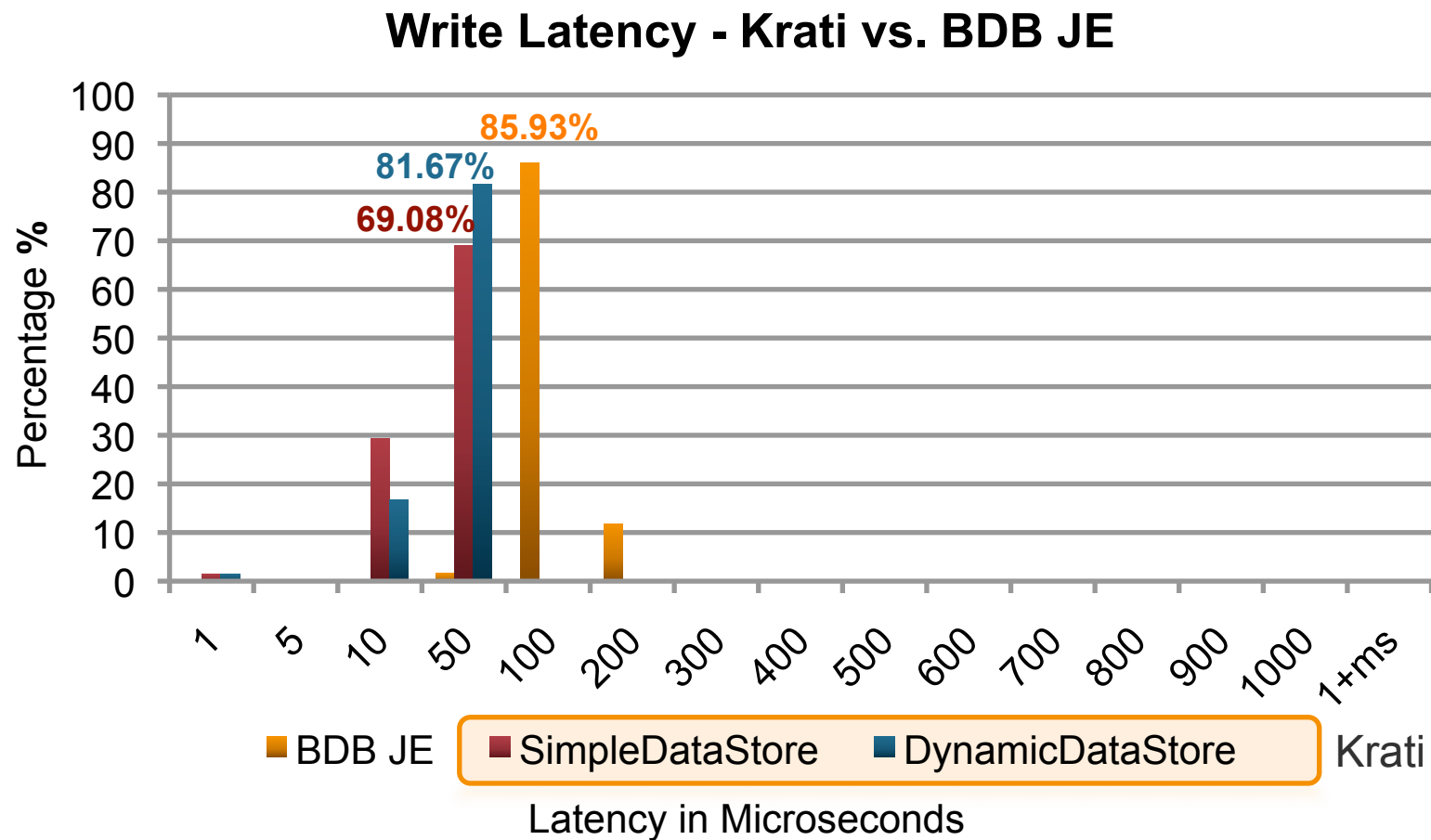
# Write Throughput – Krati vs. BDB



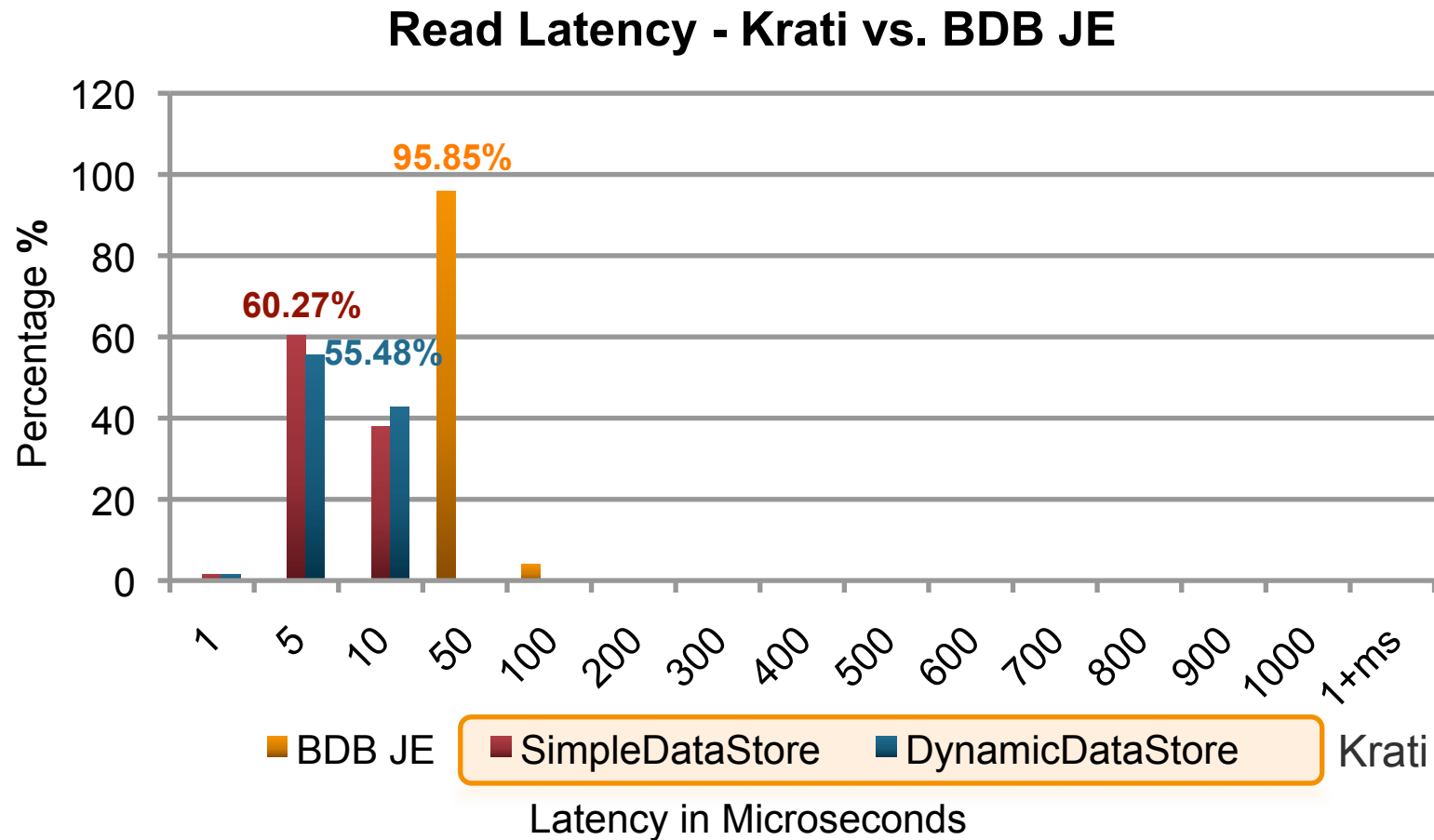
# Read Throughput – Krati vs. BDB



# Write Latency – Krati vs. BDB



# Read Latency – Krati vs. BDB



# 1-Hour GC Summary - Krati vs. BDB

## 2.5 Million Unique Keys

	BDB JE	SimpleDataStore	DynamicDataStore
Test Time	1h 5m 40s	1h 4m 40s	1h 8m 30s
Segment Size	9-10 MB (.jdb)	256 MB	256 MB
Segment ID(s)	0x0 – 0x2ace	0 - 20	0 - 19
# Segments	10958	529	790
Memory Footprint	9.6 GB	11.3 GB	10.5 GB
Total Disk Writes	102 GB	132.25 GB	197.5 GB
Disk Throughput	26.5 MB/s	34.9 MB/s	39.2 MB/s
GC Perf.	21166 MB/s	187156 MB/s	218298 MB/s
Full GC Perf.	252 MB/s	2.42 MB/s	5.53 MB/s
GC Max Pause	5144 ms	1208 ms	337.44 ms
GC Min Pause	1.22 ms	0.78 ms	1.18 ms
GC Avg. Pause	221.33 ms	23.63 ms	19.98 ms



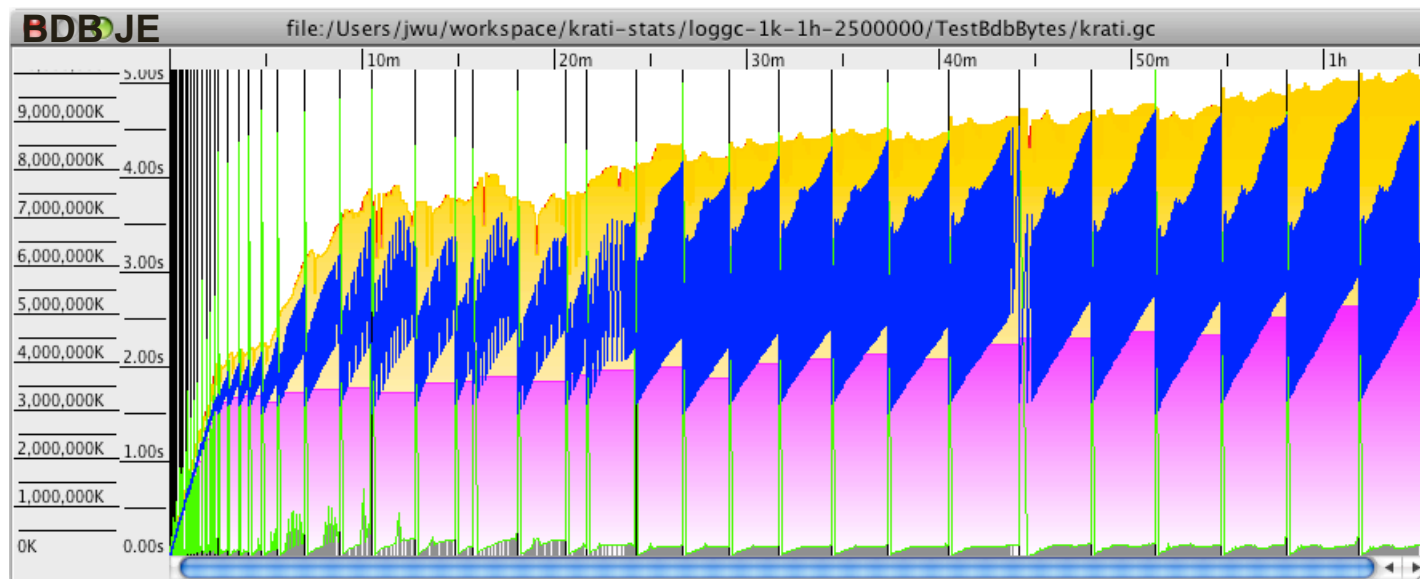
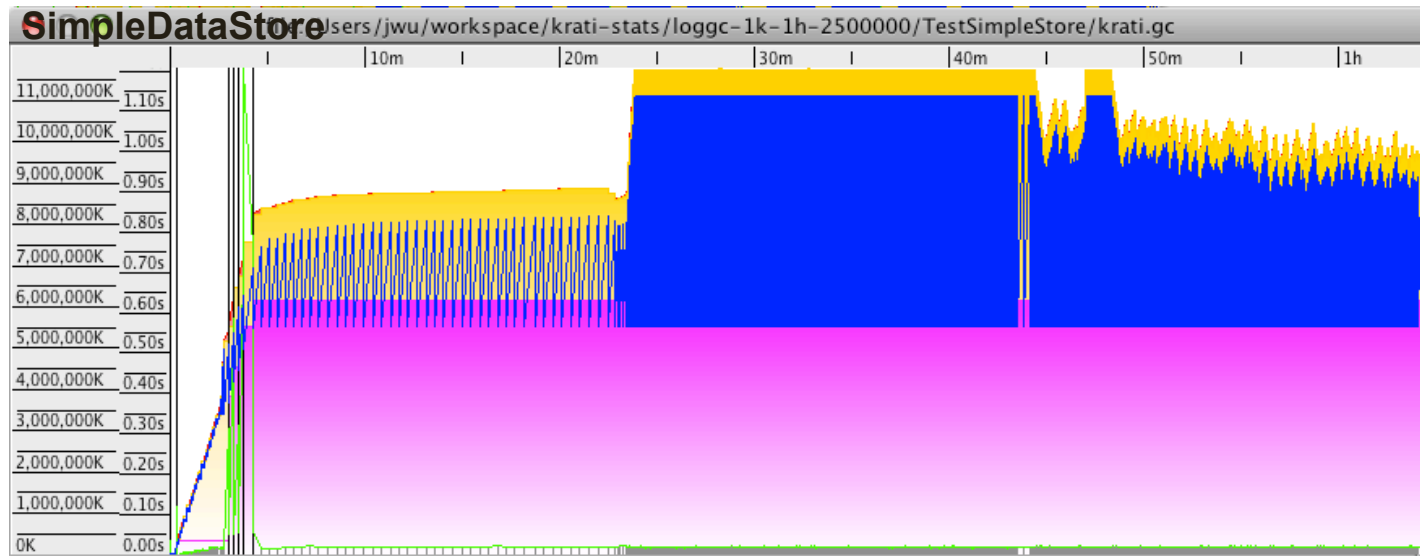
# Appendix

# 1-Hour GC Summary - Krati vs. BDB

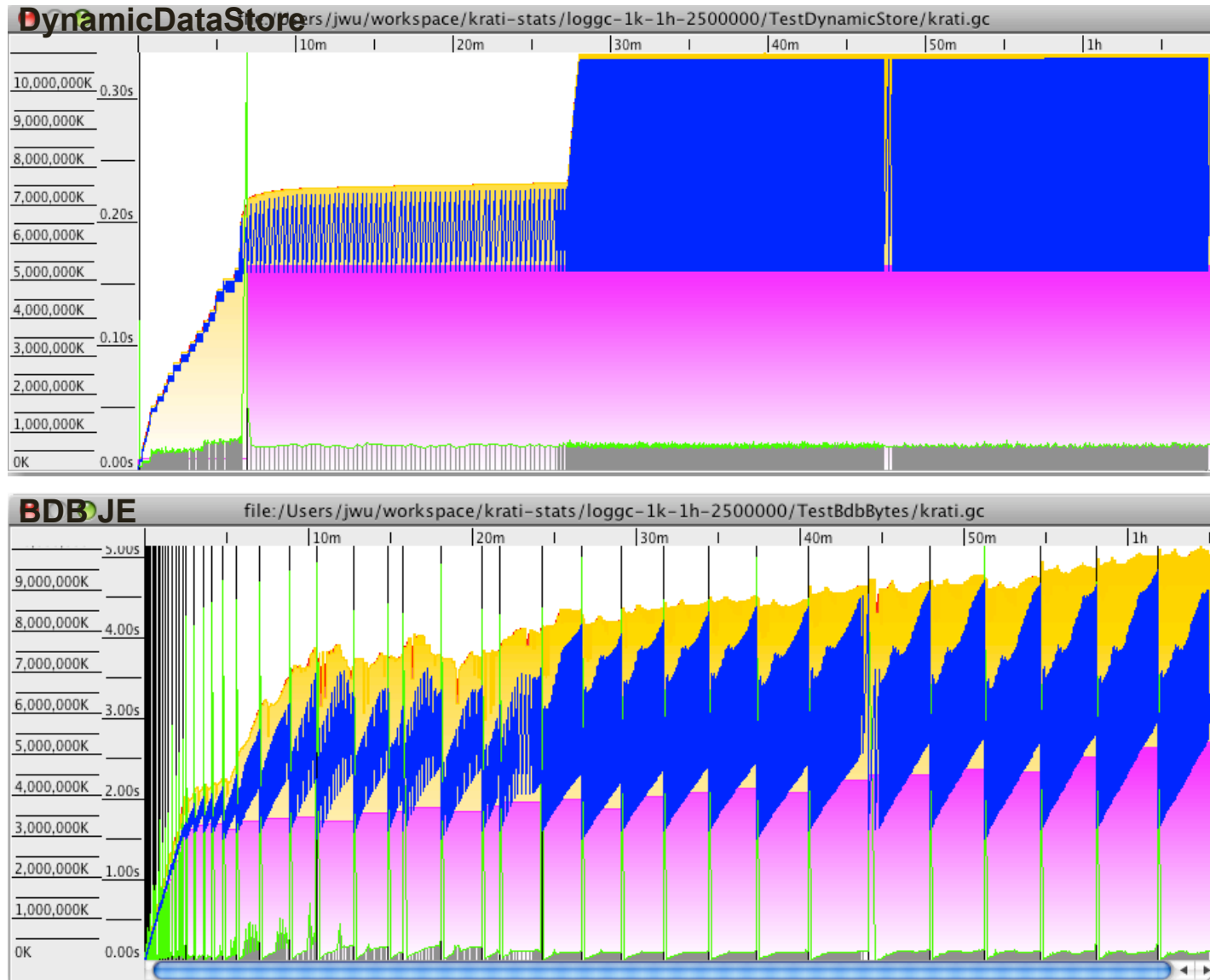
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# 1-Hour GC Statistics – Krati vs. BDB



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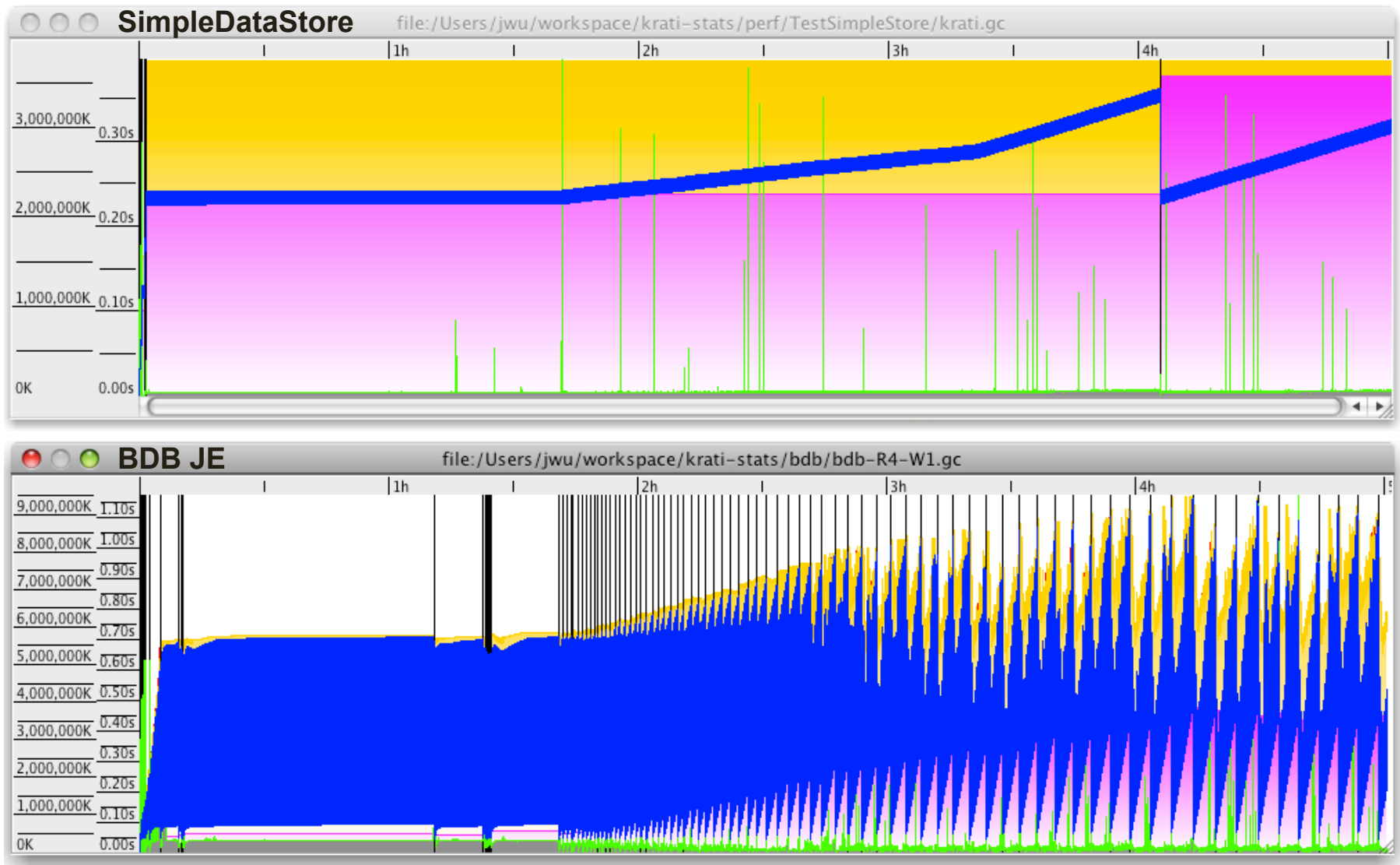


# 5-Hour GC Summary - Krati vs. BDB

## 1 Million Unique Keys

	BDB JE	SimpleDataStore	DynamicDataStore
Test Time	5h 1m 57s	5h 1m 41s	5h 2m 14s
Segment Size	9-10 MB (.jdb)	256 MB	256 MB
Segment ID(s)	0x0 - 0x11485	0 - 7	0 - 7
# Segments	70789	2093	3076
Memory Footprint	9.08 GB	3.59 GB	3.53 GB
Total Disk Writes	657 GB	523.25 GB	769 GB
Disk Throughput	37.12 MB/s	29.60 MB/s	43.42 MB/s
GC Perf.	178337 MB/s	22248 MB/s	22567 MB/s
Full GC Perf.	1752 MB/s	46.19 MB/s	56.03 MB/s
GC Max Pause	1173 ms	396.29 ms	407.25 ms
GC Min Pause	0.99 ms	0.3 ms	0.34 ms
GC Avg. Pause	30.25 ms	6.53 ms	6.13 ms

# 5-Hour GC Statistics – Krati vs. BDB



# 5-Hour GC Statistics – Krati vs. BDB

