An Experimental Comparison of Concurrent Data Structures

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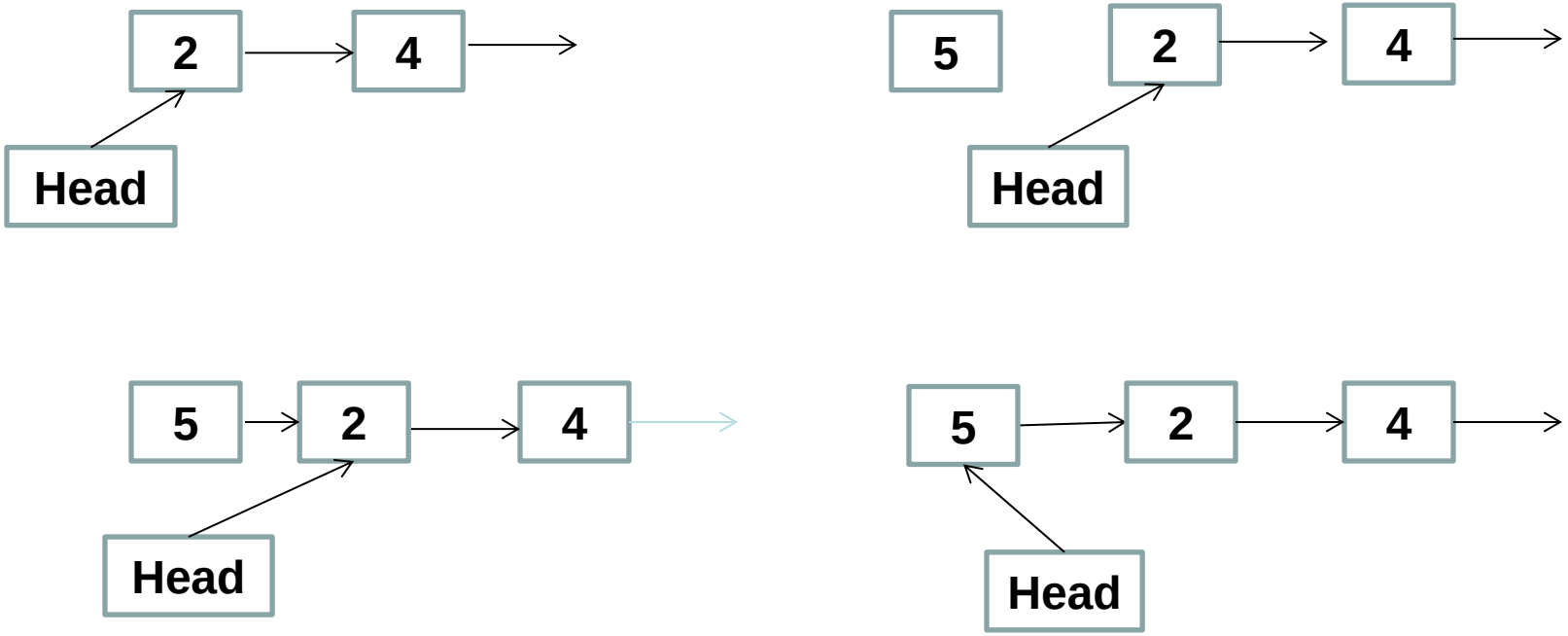
The Problem

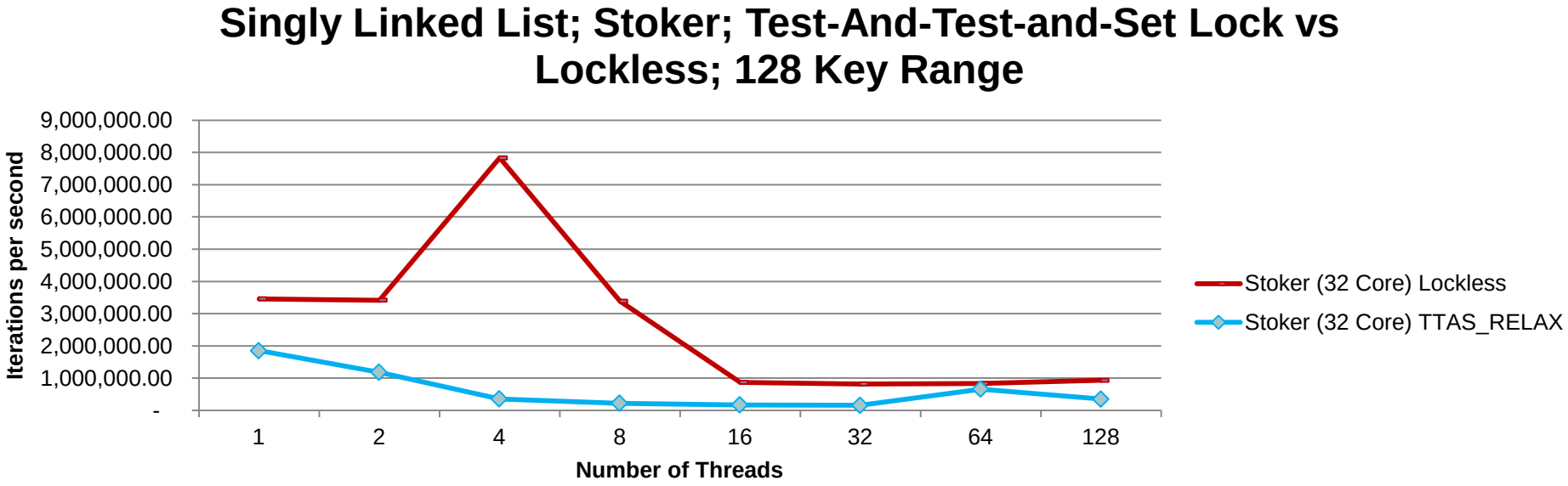
- Concurrent Data Structure
  - Designed for access by multiple threads
  - Not much data comparing the different variations
- Implemented 3 concurrent data structures
  - Ring Buffer
  - Linked List
  - Hash Table

The Method

- Can use compare-and-swap to atomically add a node to the head of a linked list:



Interesting Findings



	Stoker Lockless	Stoker TTAS_RELAX
Cache References	9.21x10^8	4.82x10^8
Cache Misses	3.76x10^8 (41%)	2.49x10^8 (52%)
CPU Cycles	2.32x10^12	2.68x10^12
Stalled Backend Cycles	1.37x10^12 (60%)	2.28x10^12 (85%)