

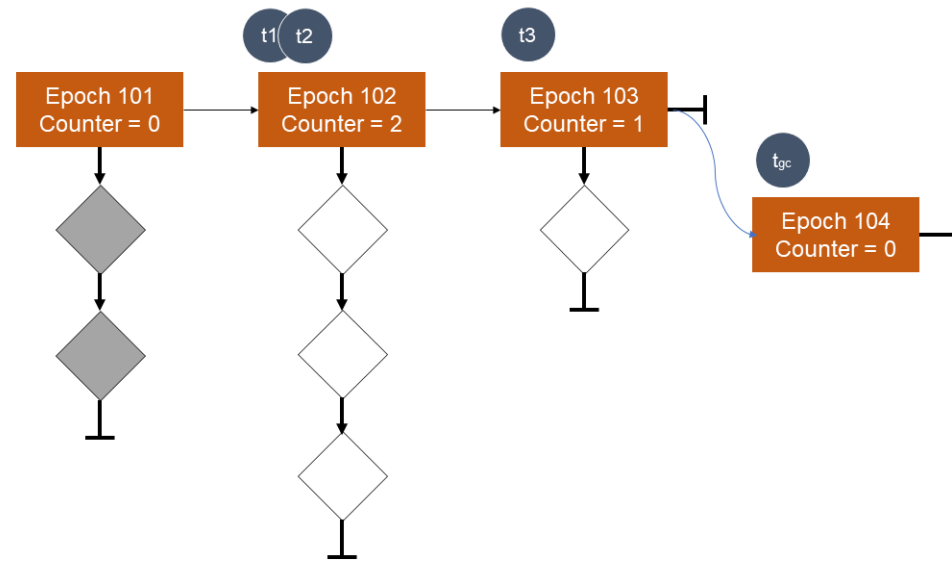
Improve The Bw-tree

- Epoch base Garbage Collection

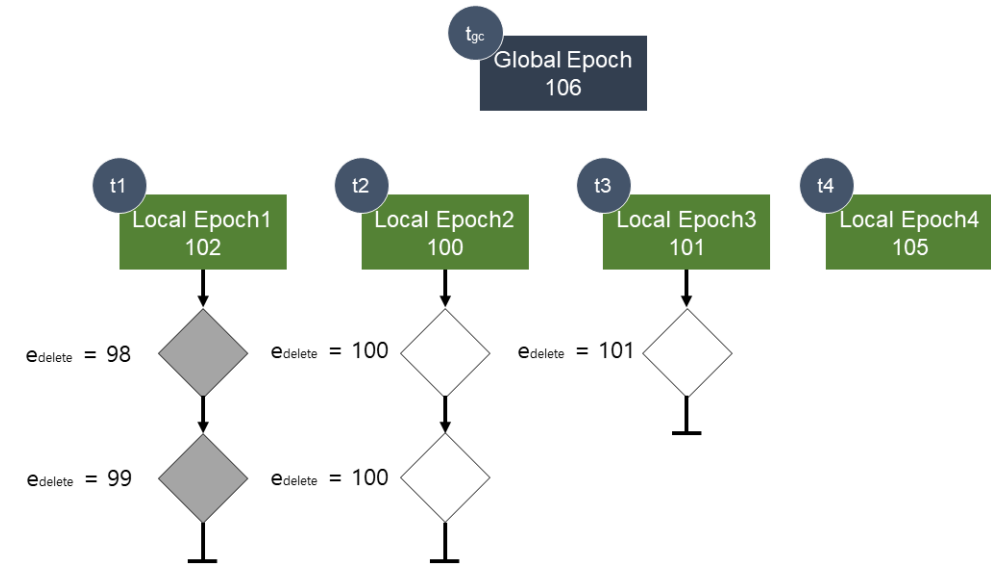
2018008004 Kim Siwoo



Centralized and Decentralized GC

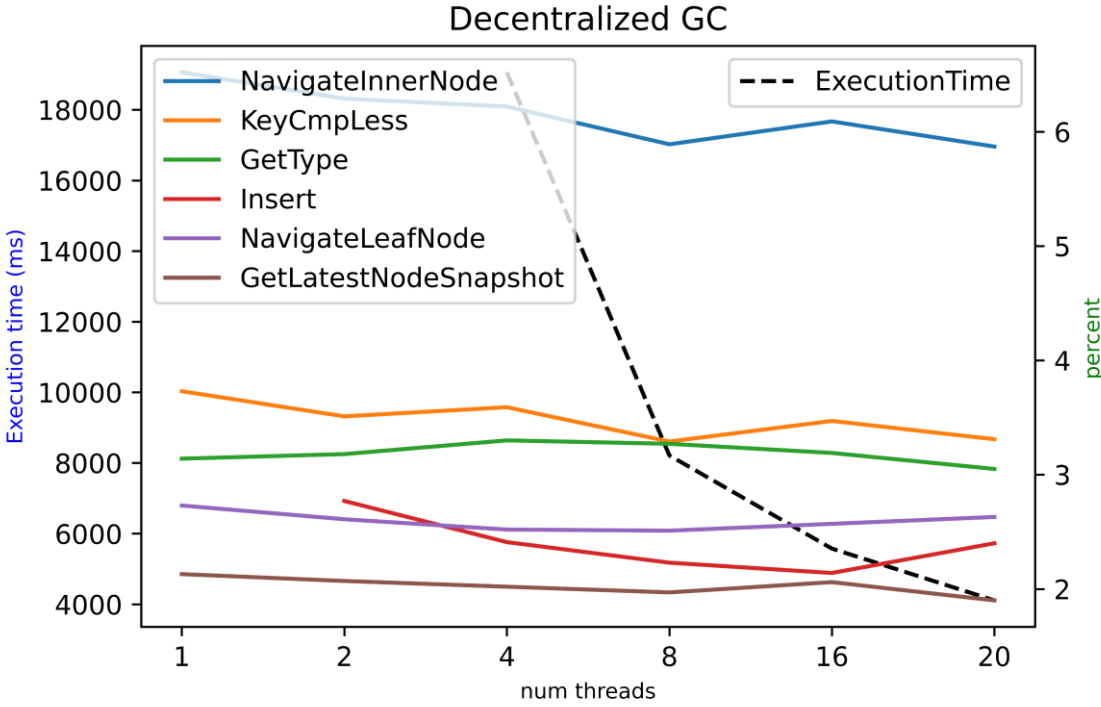
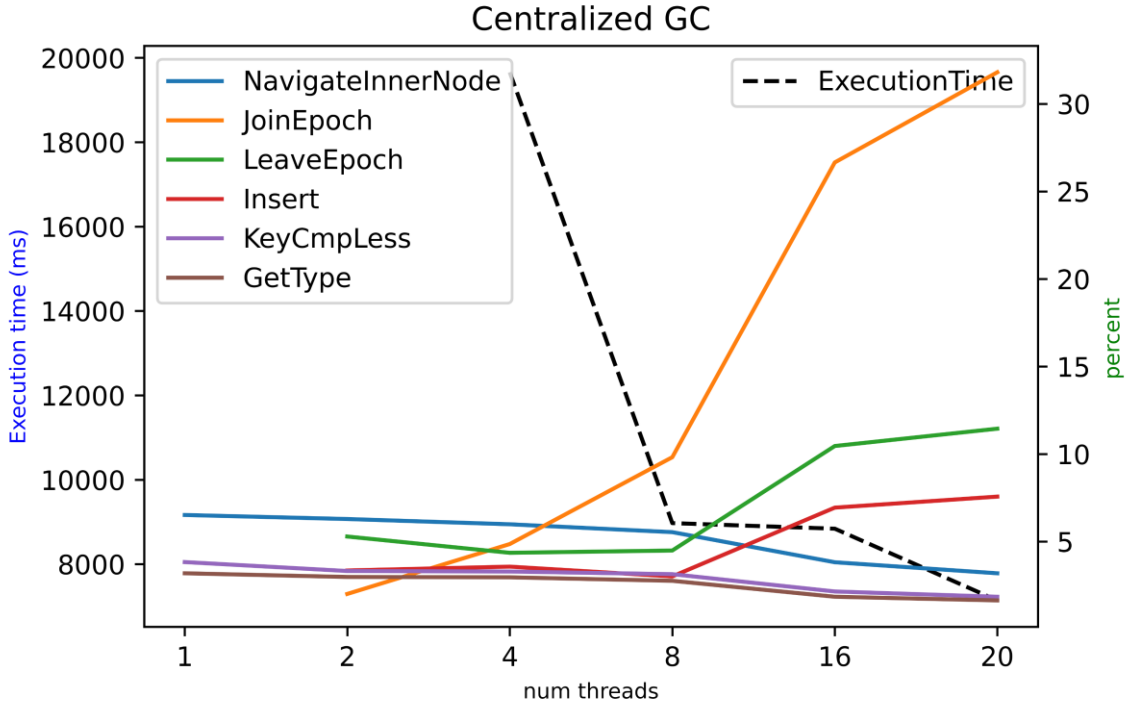


Centralized GC

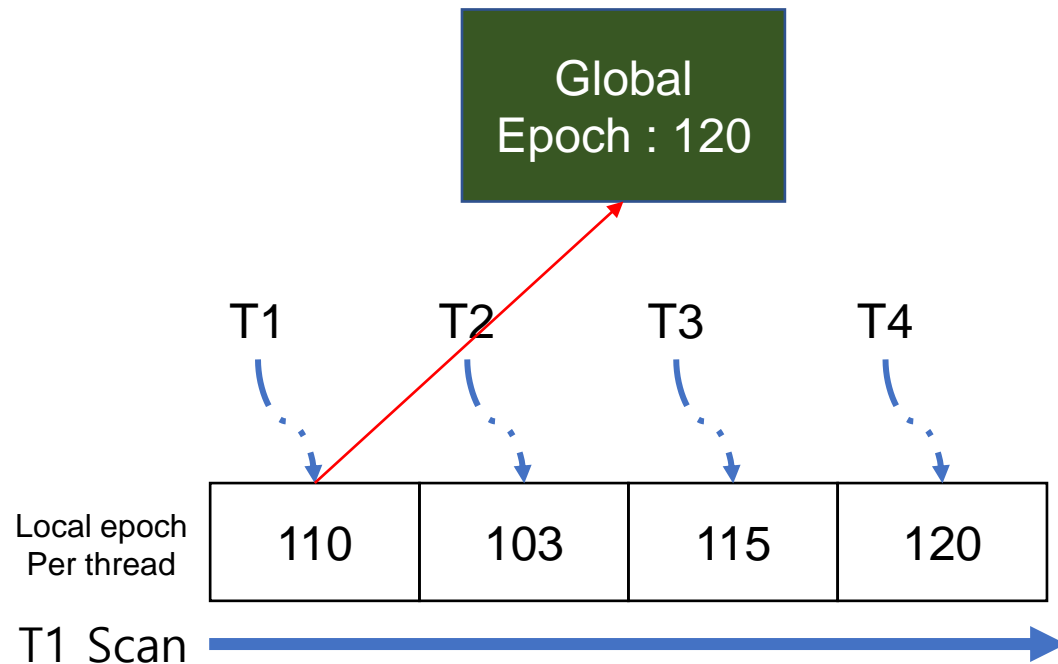


Decentralized GC

Performance Compare



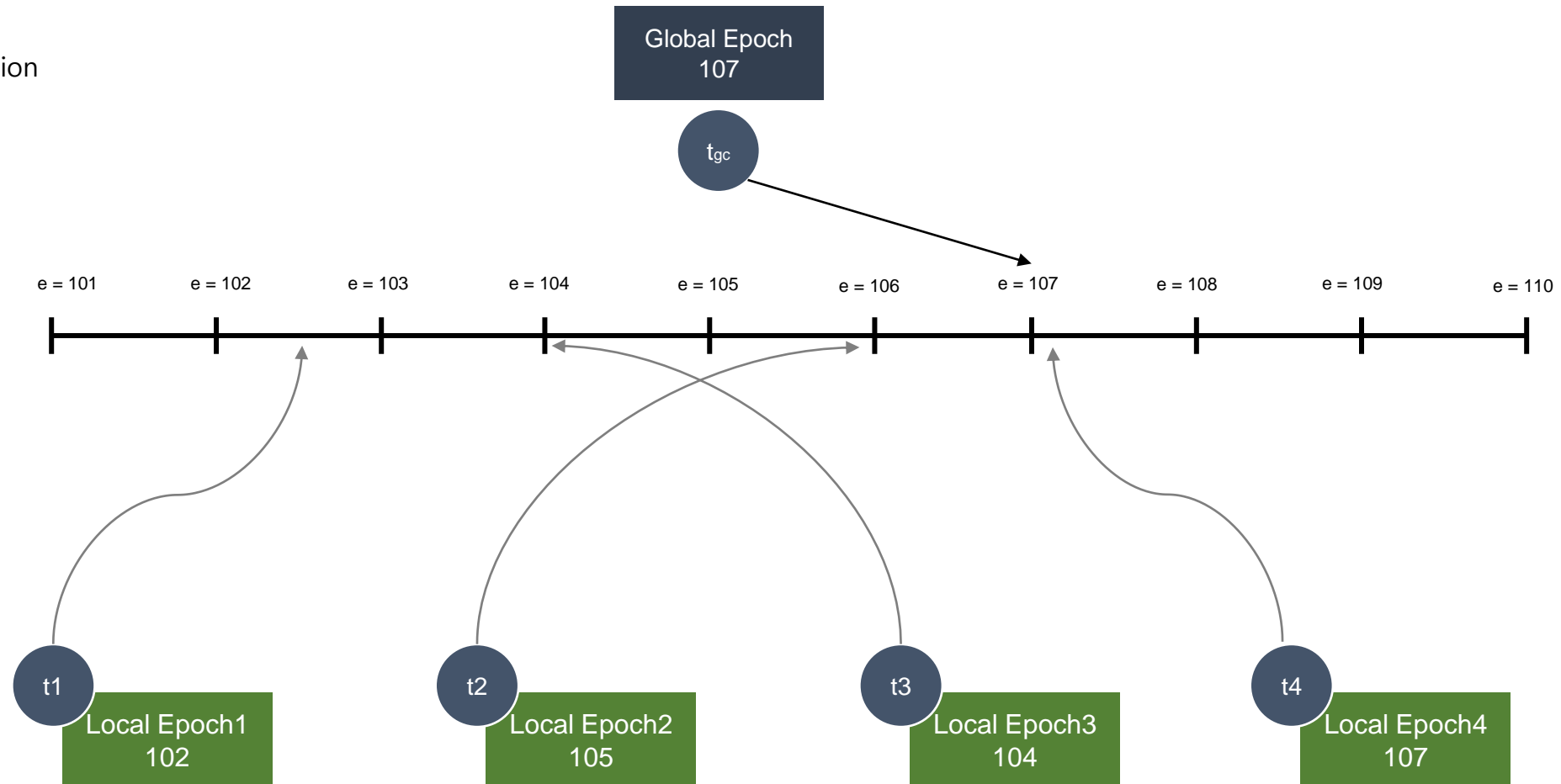
Motivation



- To perform GC, calculating minimum local epoch needs full scan.

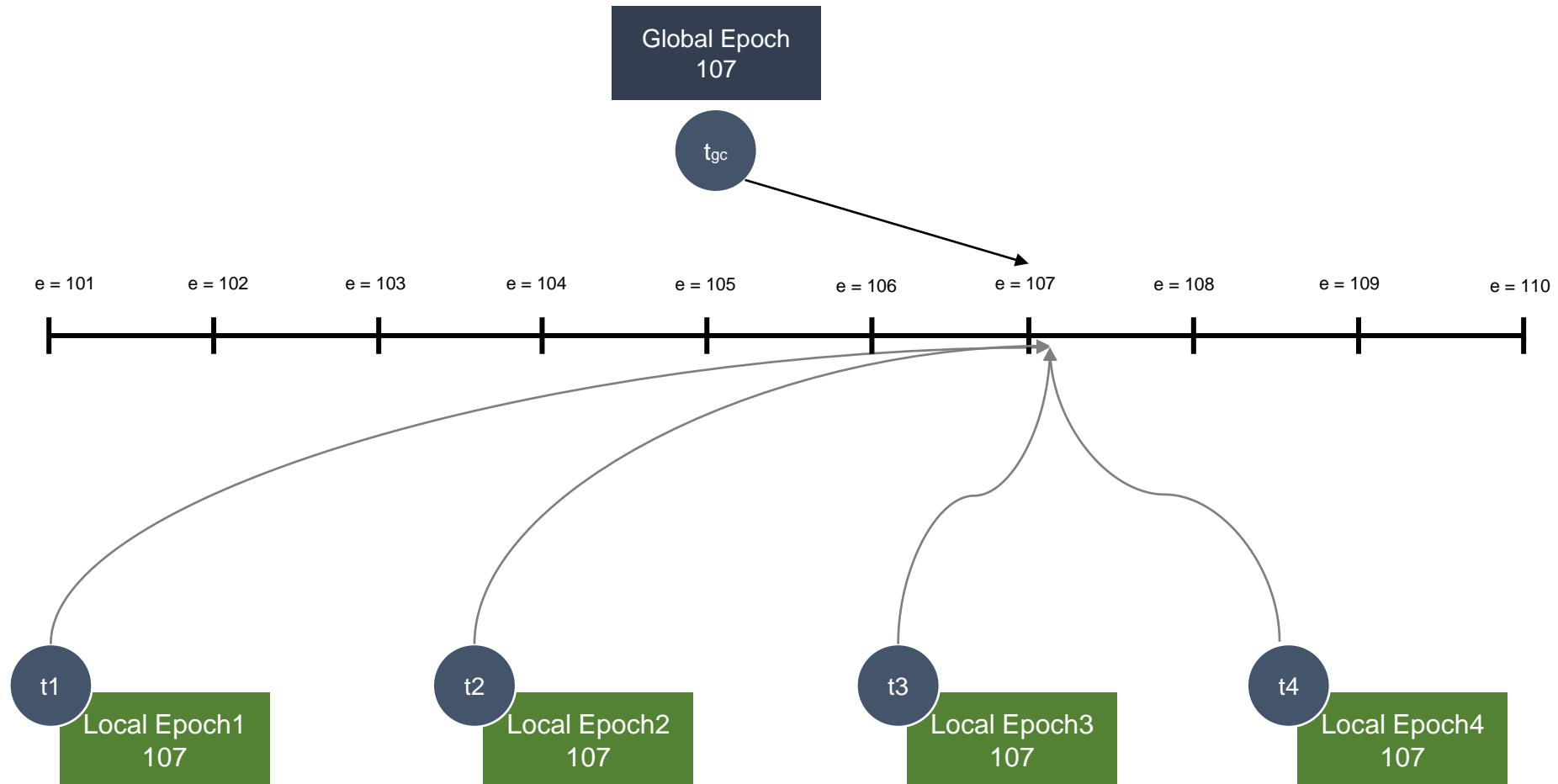
Motivation

My Expectation

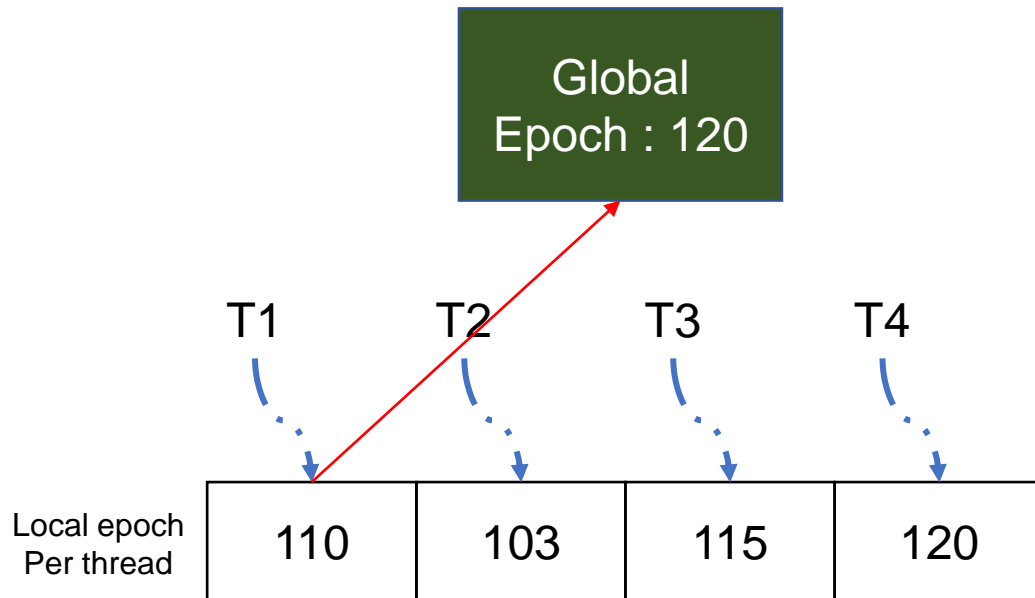


Motivation

Reality



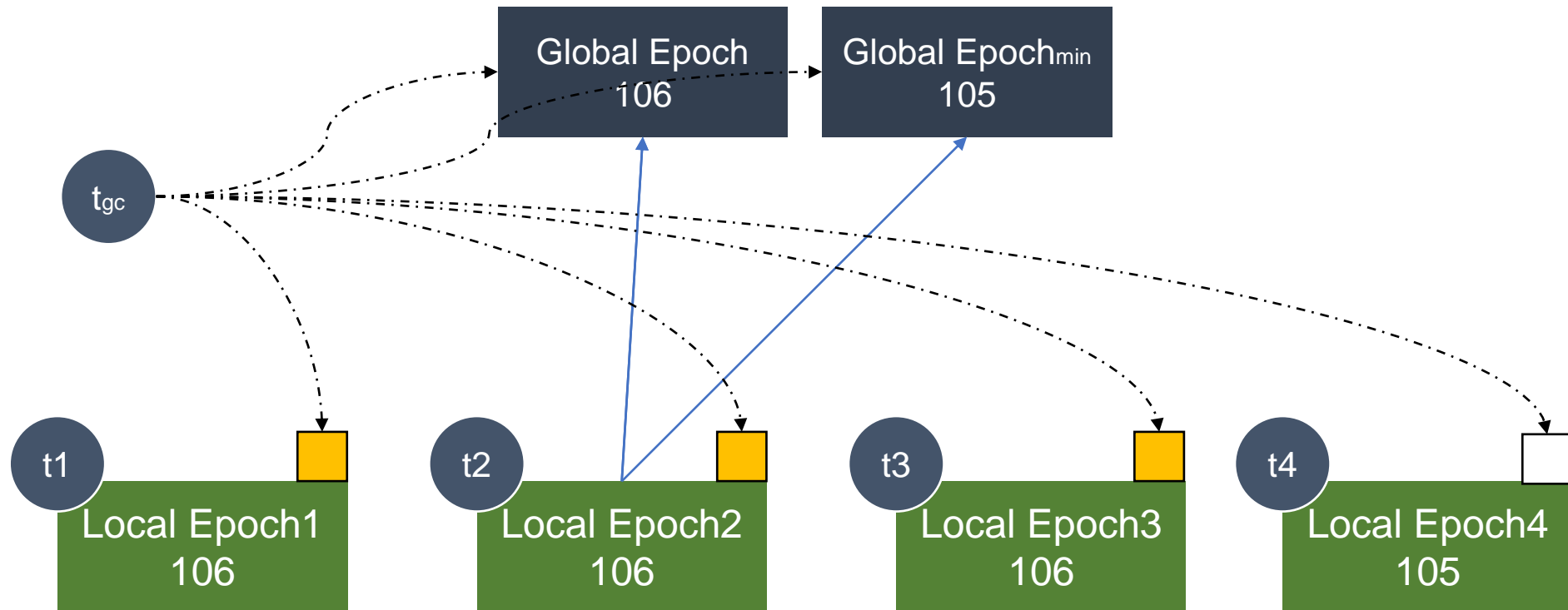
Motivation



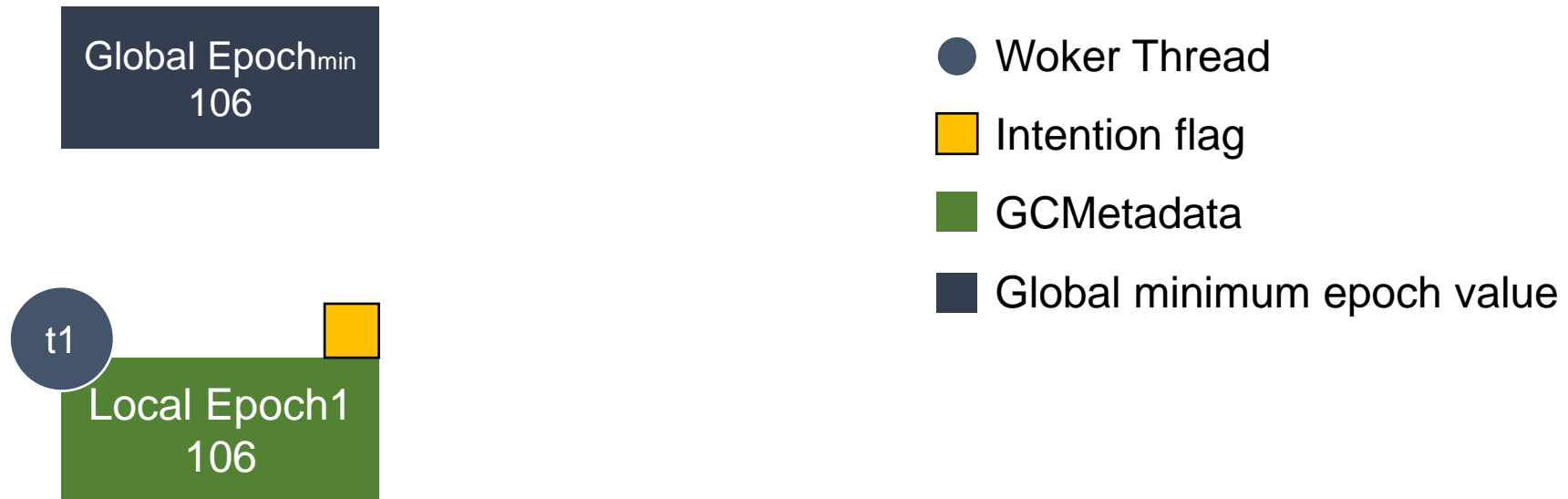
- To perform GC, calculating minimum local epoch needs full scan.
- Each threads read Global Epoch too much.

=> Let's use Global min Epoch

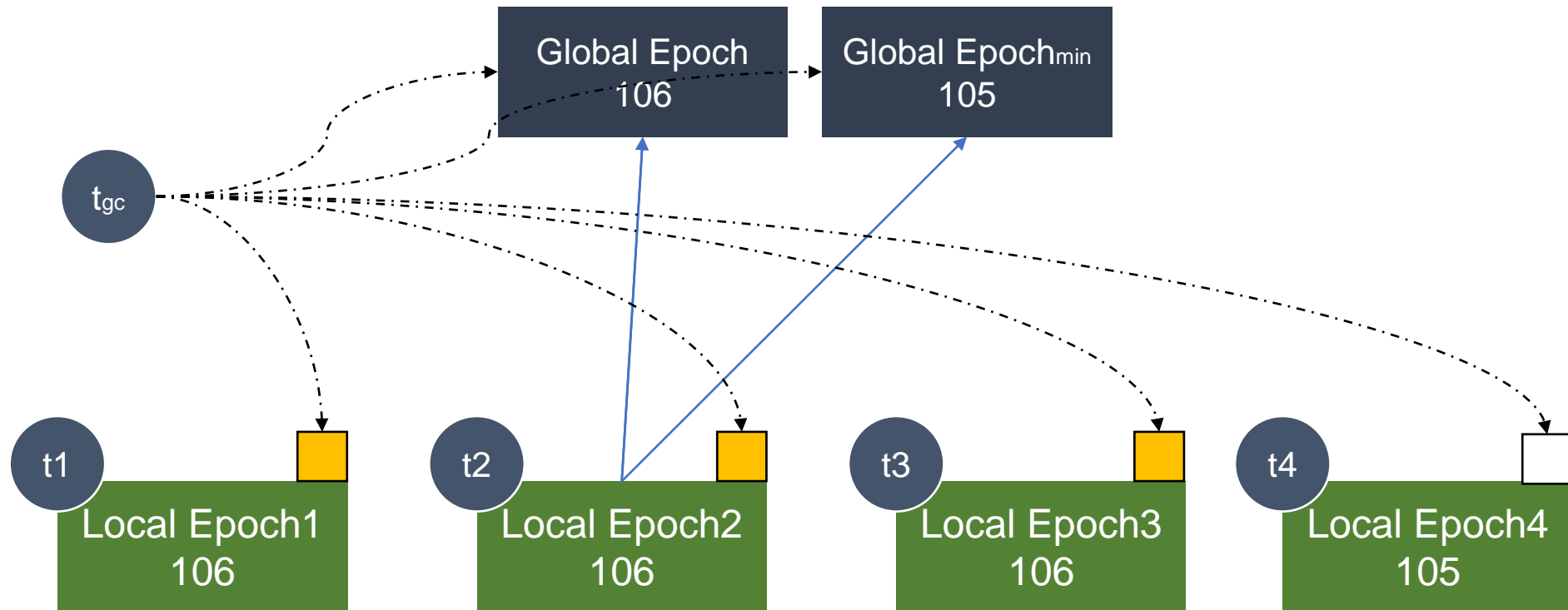
Overall Design



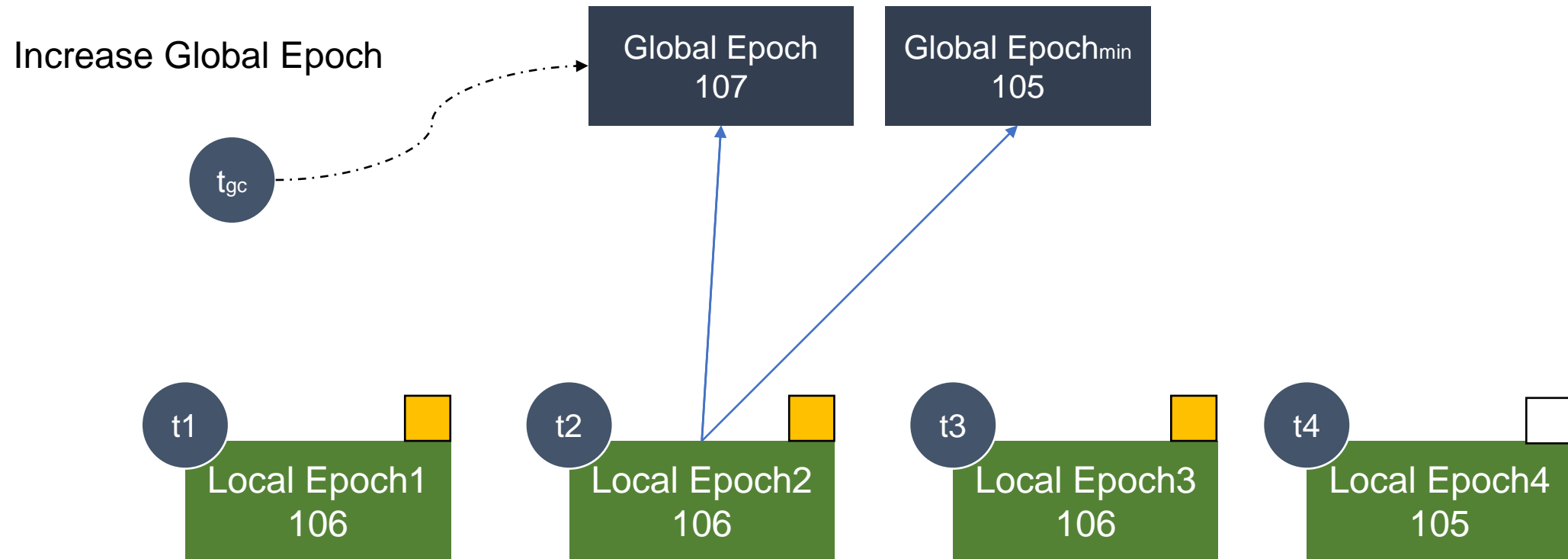
Details



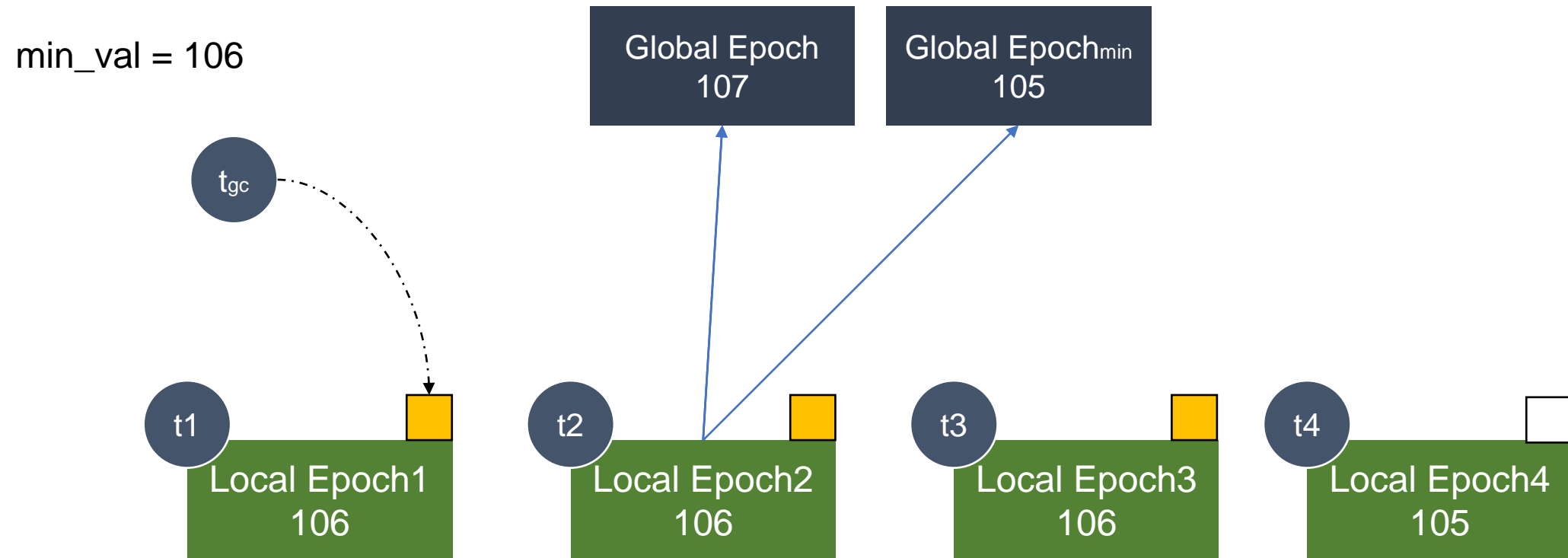
Details, PerformGarbageCollection



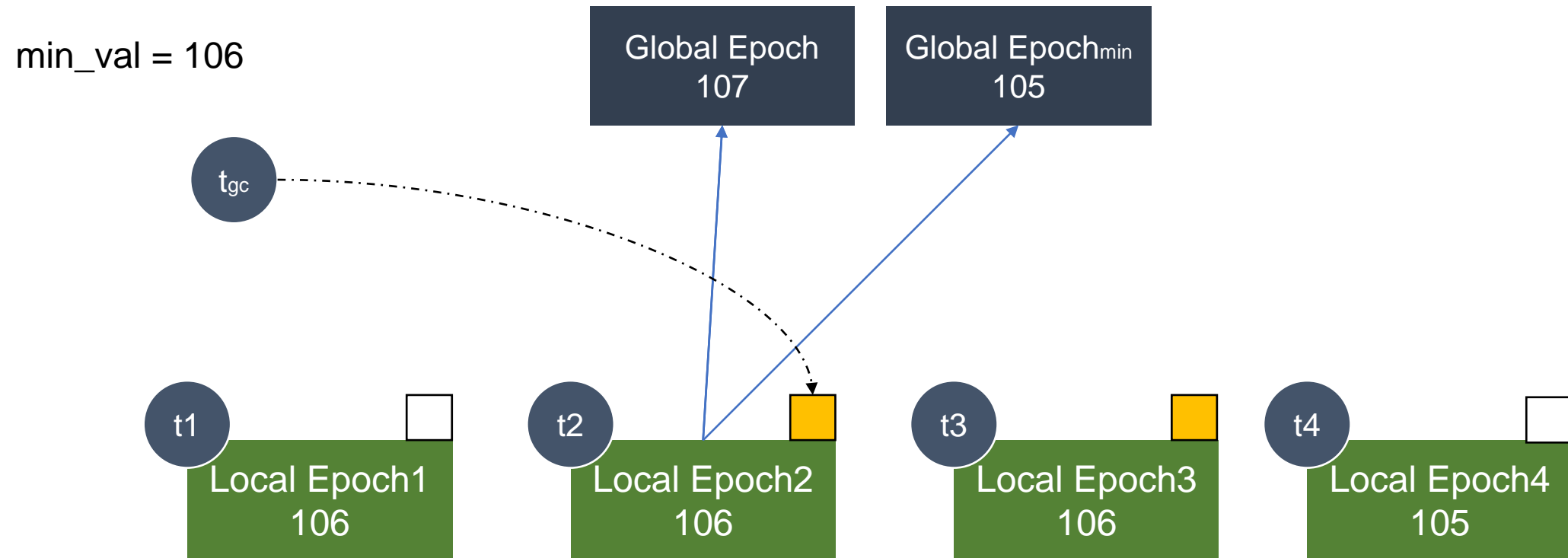
Details, PerformGarbageCollection



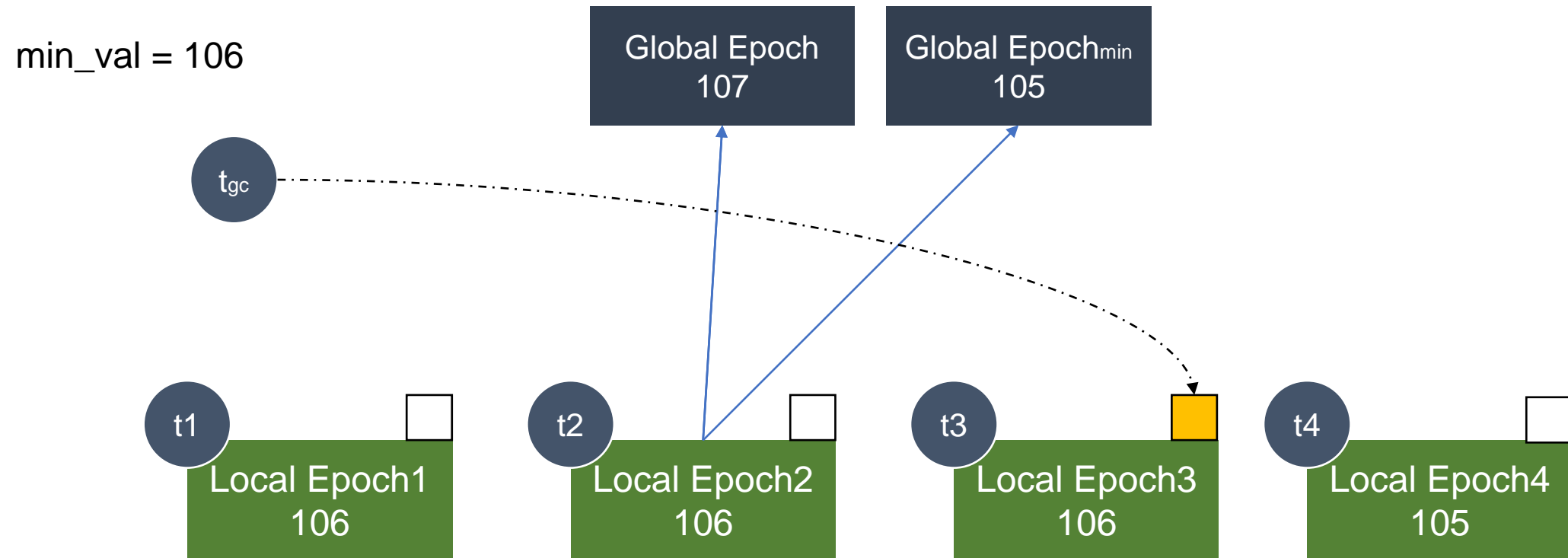
Details, PerformGarbageCollection



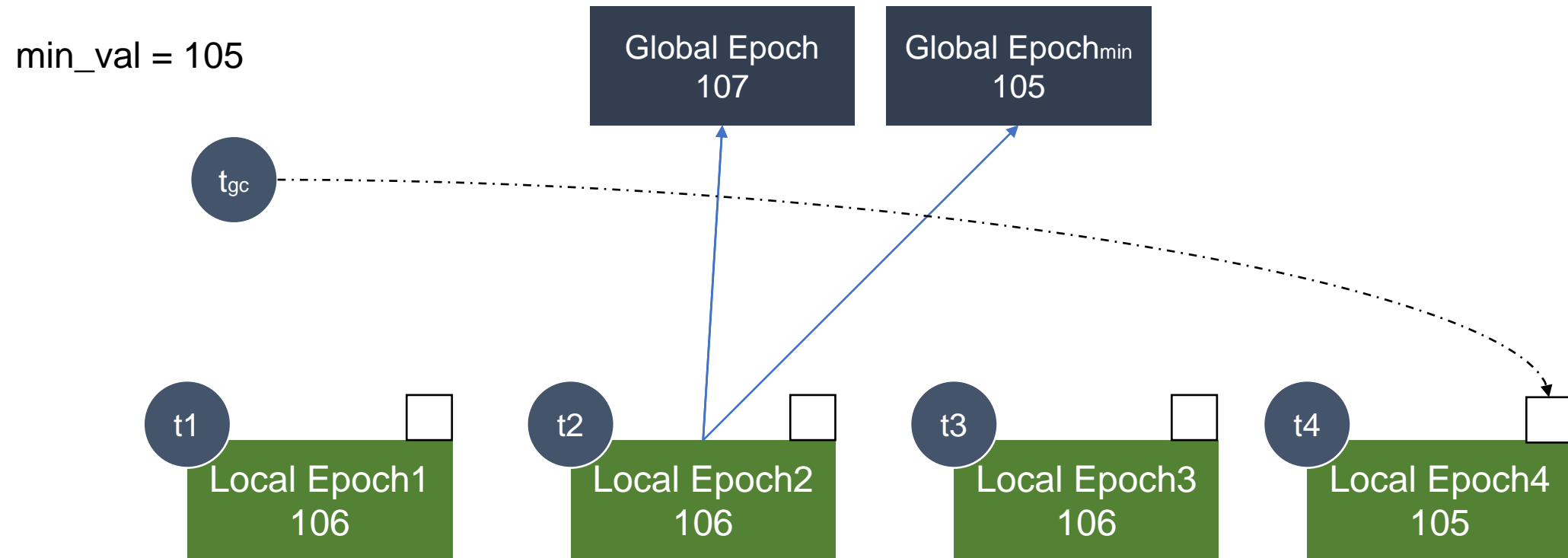
Details, PerformGarbageCollection



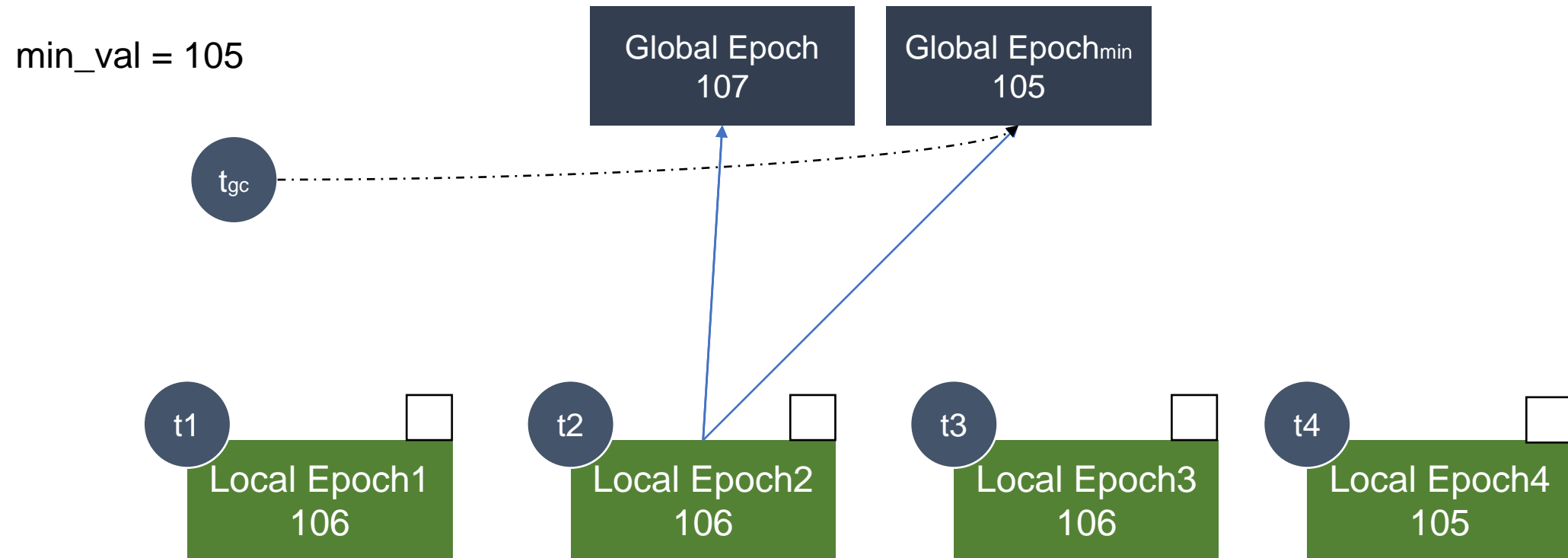
Details, PerformGarbageCollection



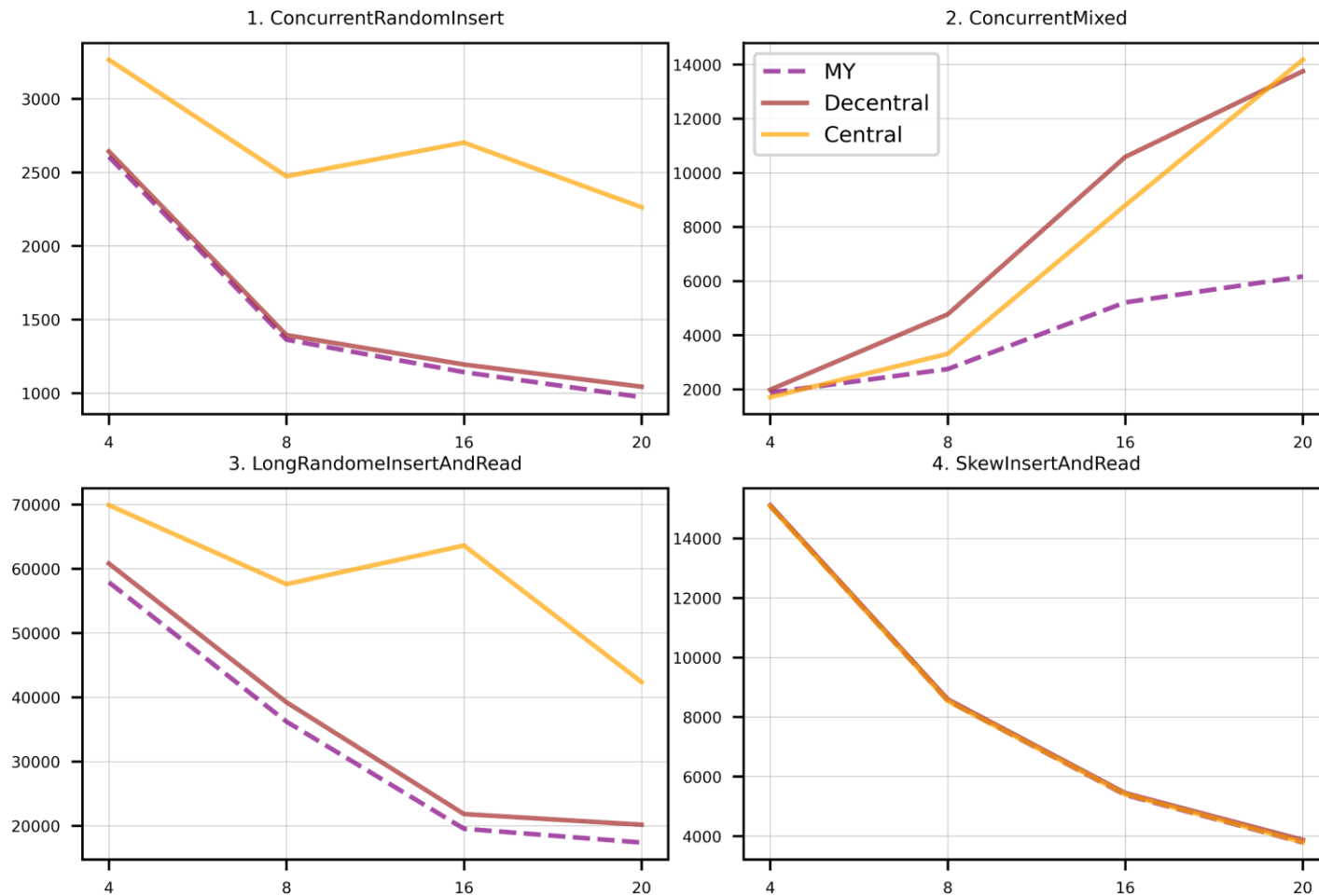
Details, PerformGarbageCollection



Details, PerformGarbageCollection



Evaluation, result



1. 1M insert, read for validation
2. 1M insert & 1M delete, read for validation
3. 8M insert & read, read for validation
4. 64K insert, read for validation. Zipf with $\alpha = 1$

Thank you!

