DynaHeap: Dynamic Division of DRAM between Heterogeneous Managed Heaps
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Big Data Frameworks Need More Memory

- Data grow at an exponential rate, but DRAM scales slower than the data growth
- Existing works extend the managed heap over NVMe SSD, NVM, or remote memory

Static DRAM Division Limitation

- Static DRAM division cannot cope with changing application behavior
  - High GC: need space for the first heap
  - High IO: need space for cache

DynaHeap: Dynamic Division of DRAM

Adaptation mechanism: Adjust memory between H1 and I/O cache

Preliminary Results

Key Takeaways

- Applications have different memory requirements at different periods
- Static division of DRAM between H1 and the cache for H2 cannot adapt to dynamic changing application behavior
- DynaHeap is on average 70% better than TeraHeap