

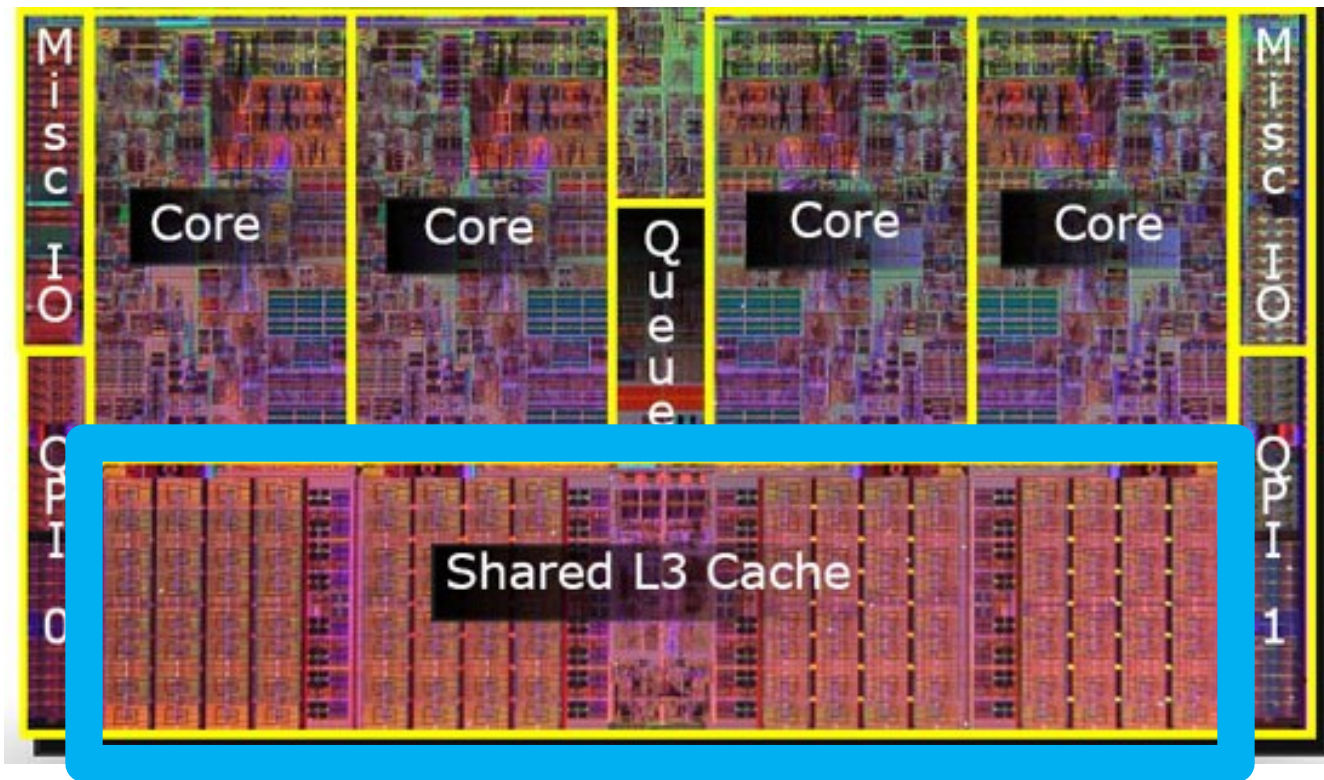


Decoupled Compressed Cache:

Exploiting Spatial Locality for Energy-Optimized Compressed Caching

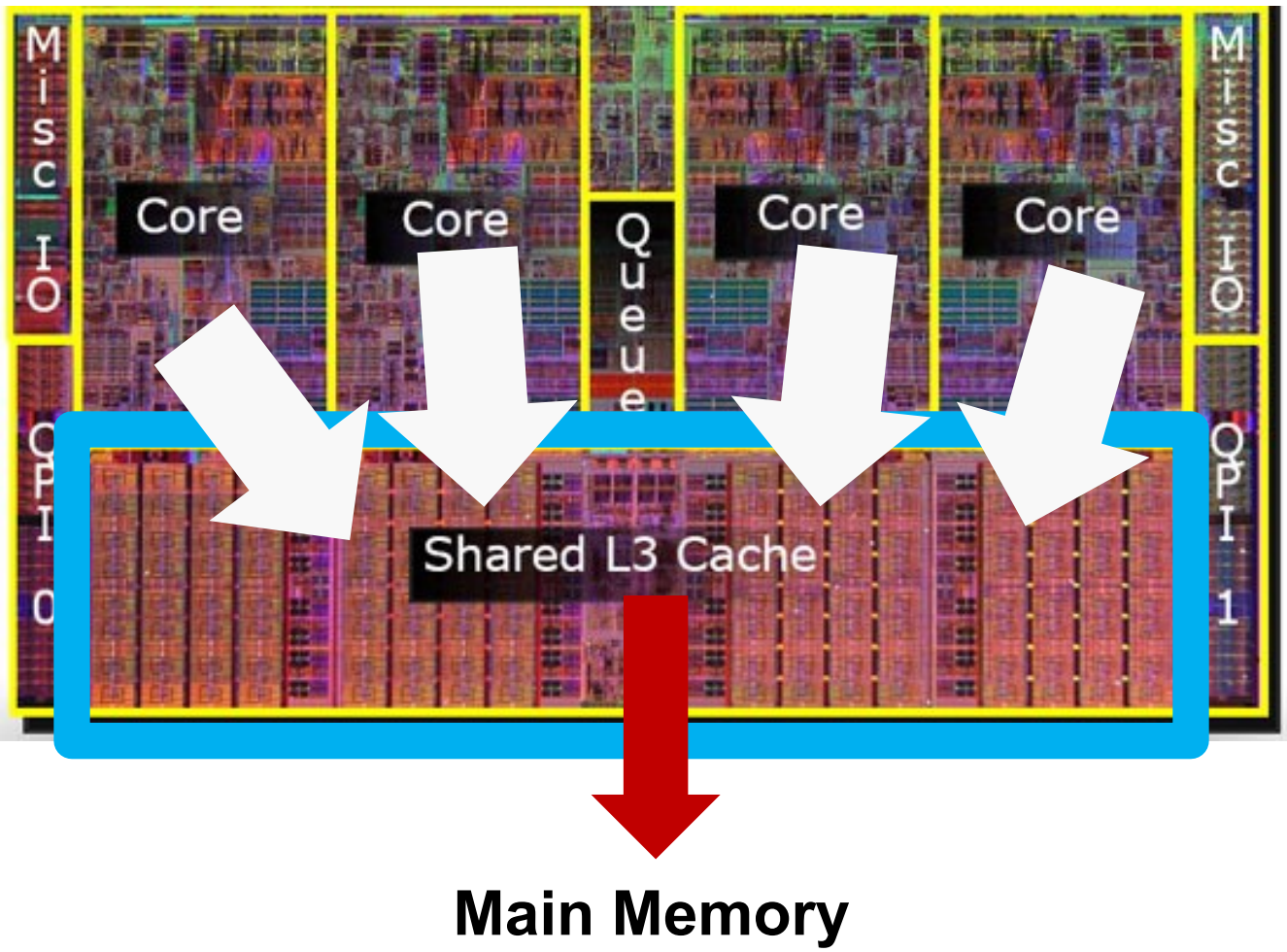
Somayeh Sardashti and David A. Wood

University of Wisconsin-Madison



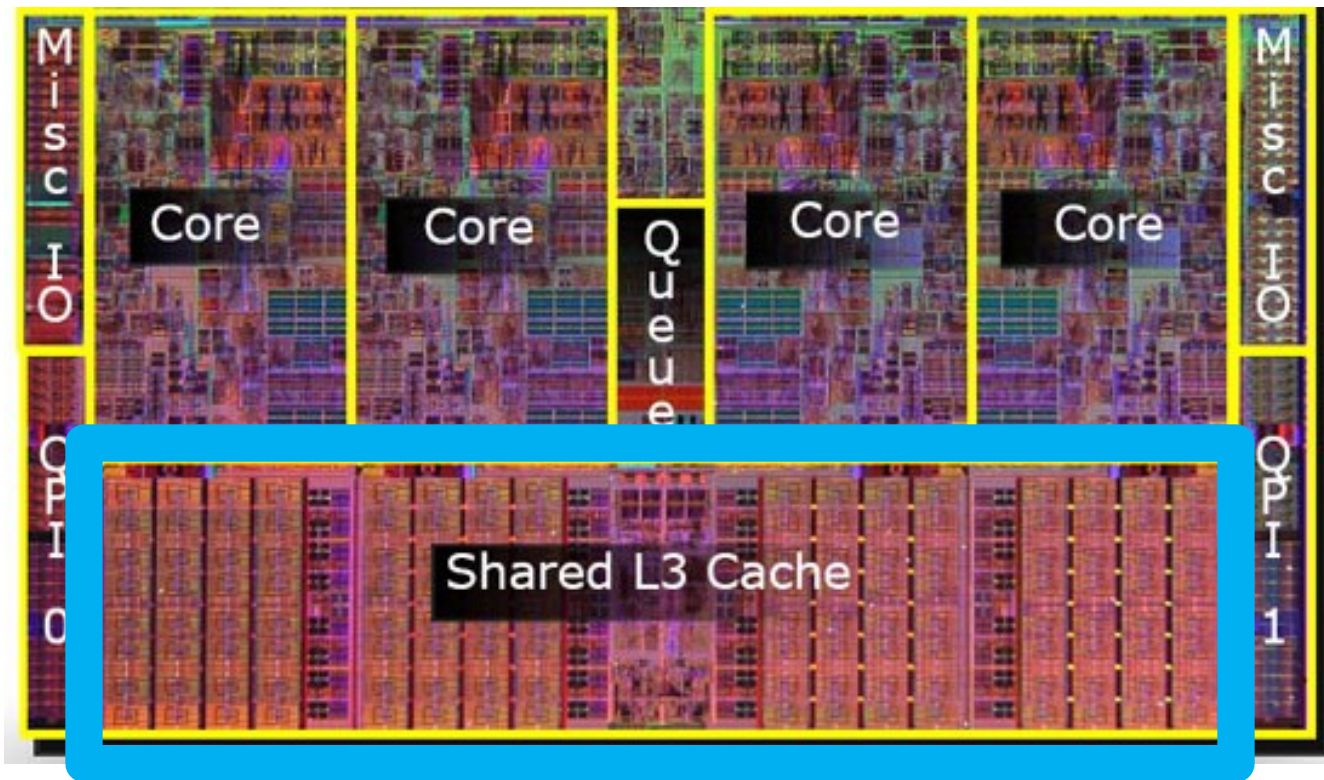


Cache as Energy Filters





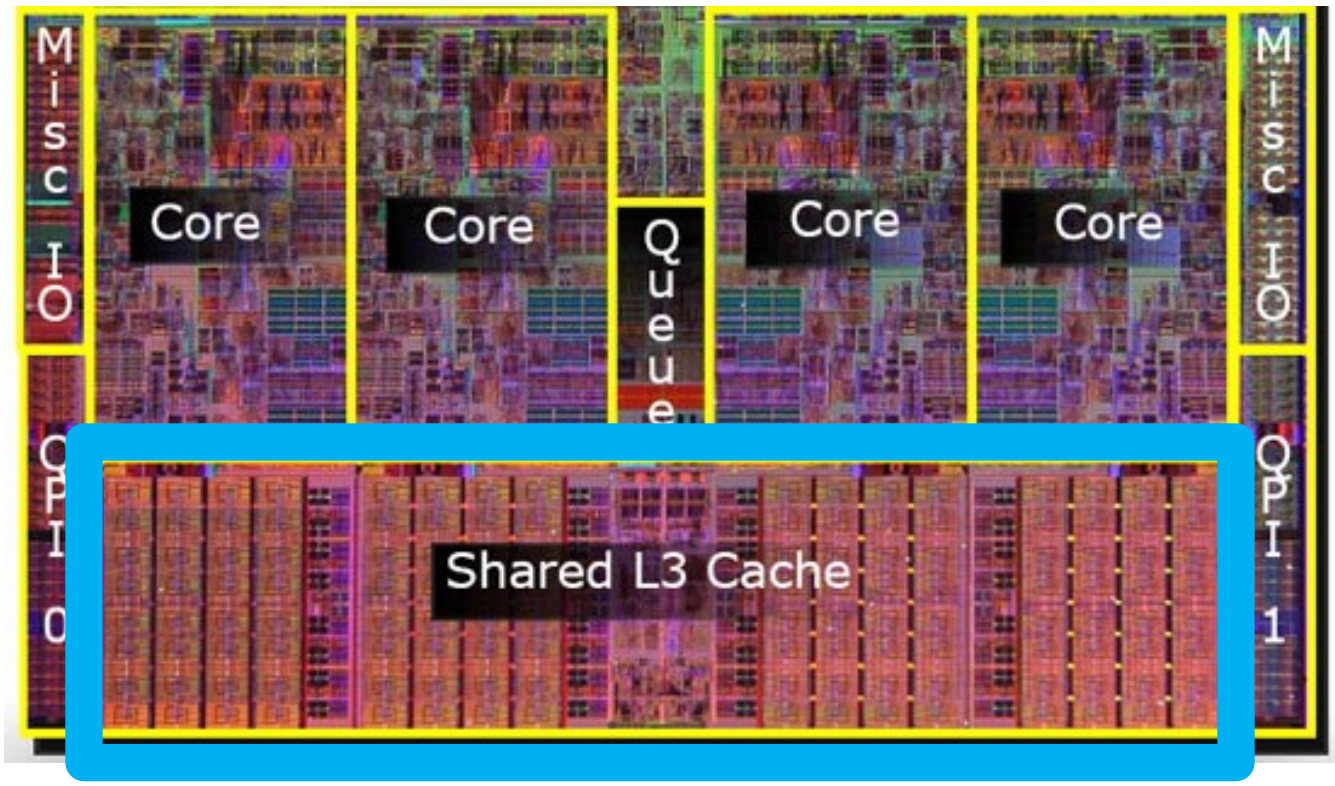
Why not double the LLC?





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2X LLC Area!





State of the Art: Compressed Cache

Compacting compressed blocks in the same data space

- ✓ **High Effective Cache Capacity**
- ✓ **Small Area Overhead**

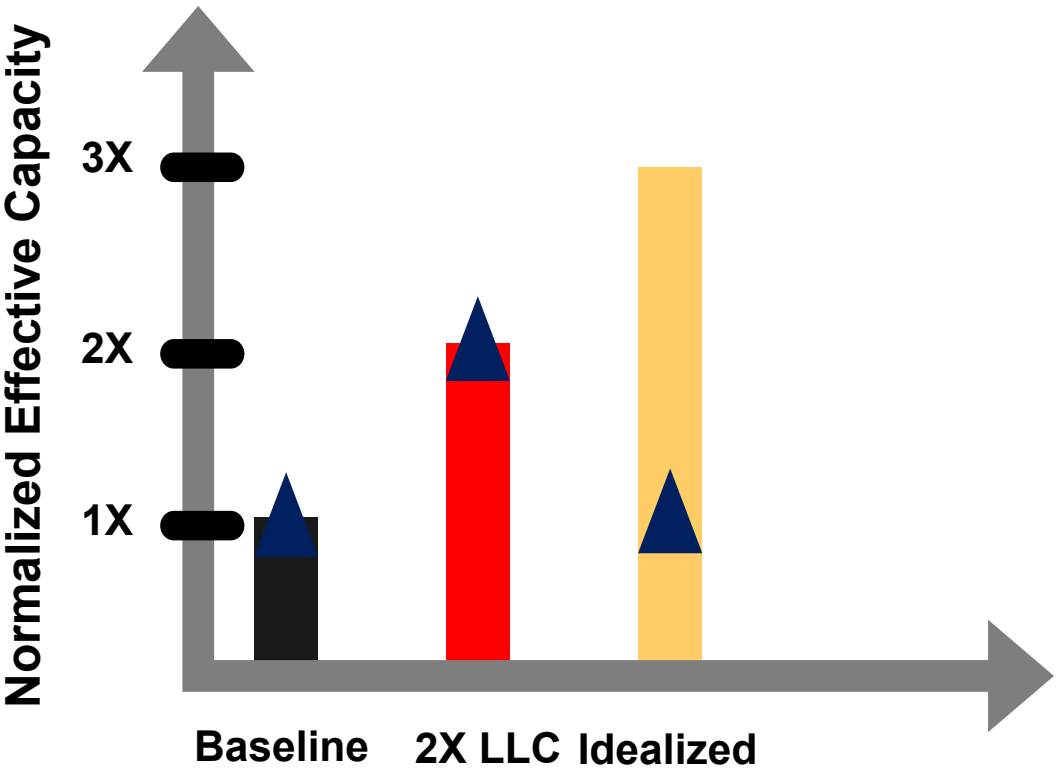




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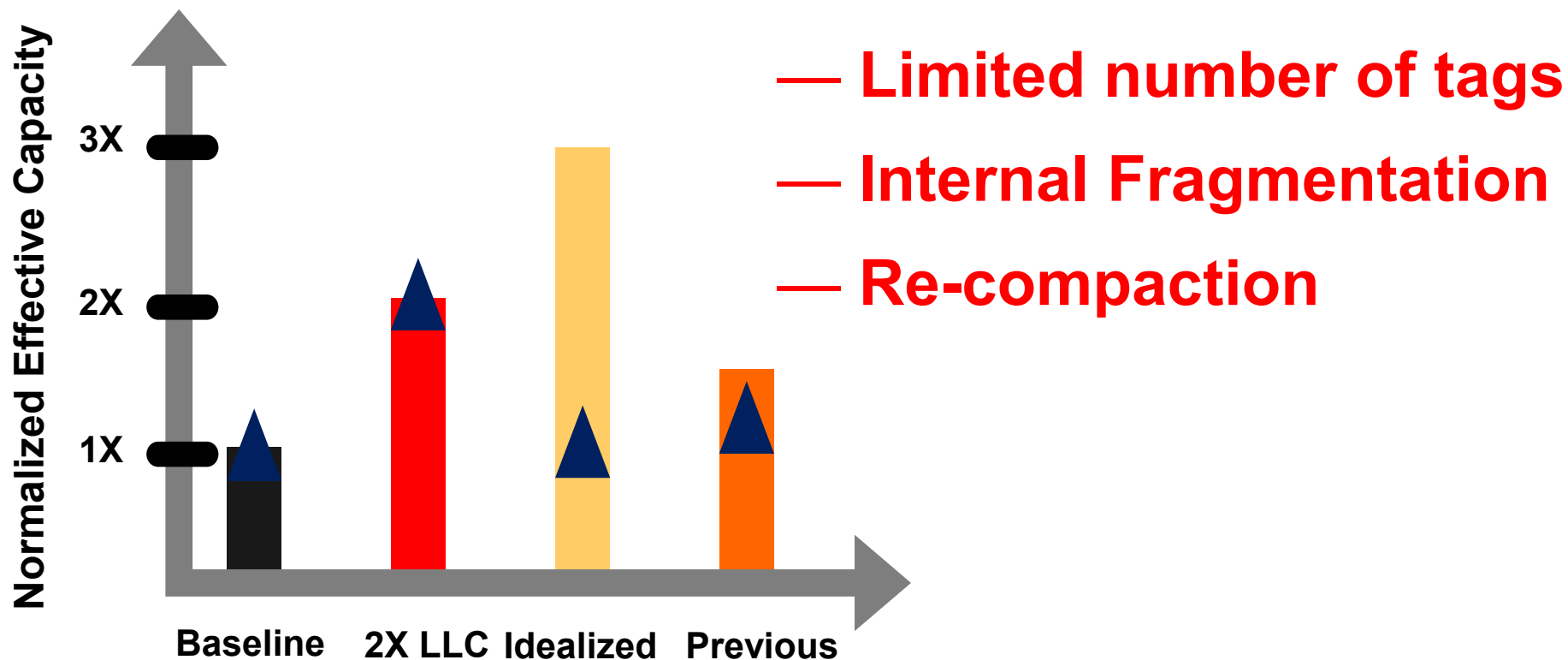




State of the Art: Compressed Cache

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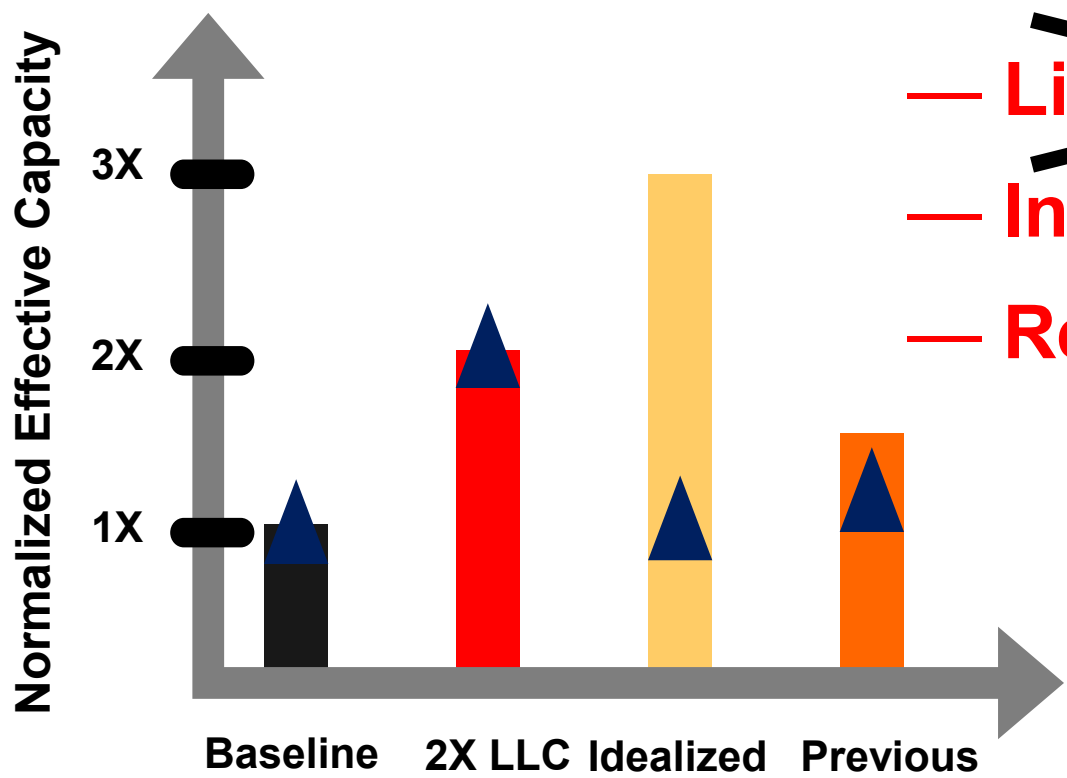
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Our Proposal: Decoupled Compressed Cache (DCC)

Decoupled Super-Blocks

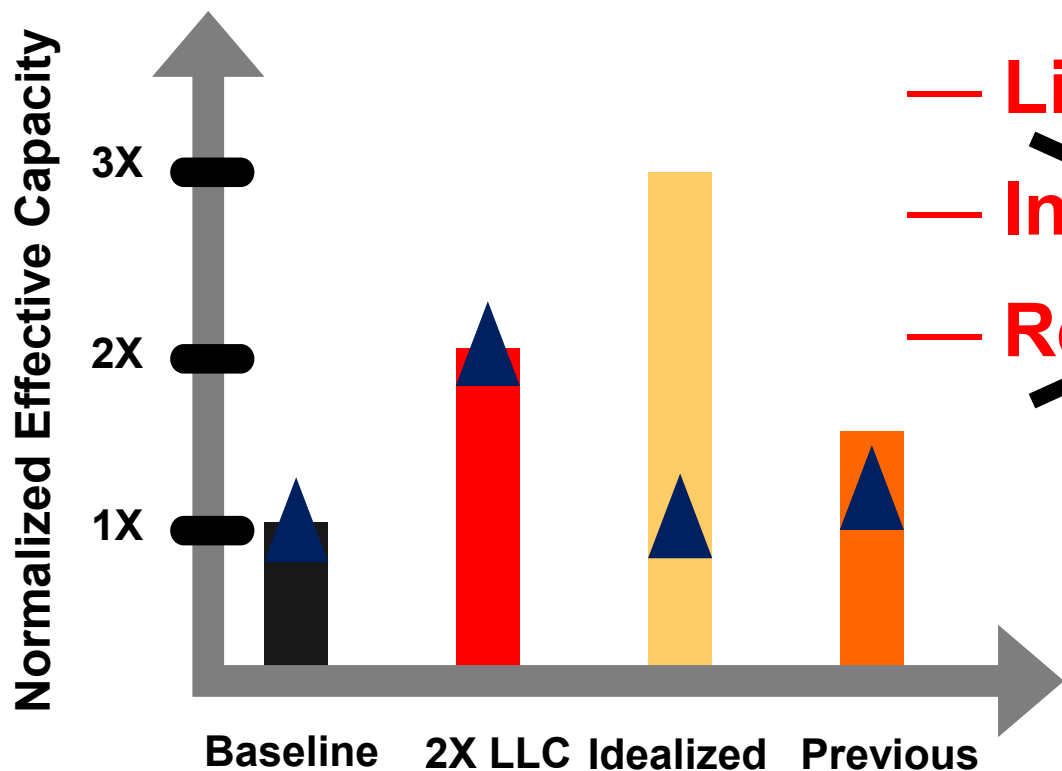


- ~~— Limited number of tags~~
- ~~— Internal Fragmentation~~
- ~~— Re-compaction~~



Our Proposal: Decoupled Compressed Cache (DCC)

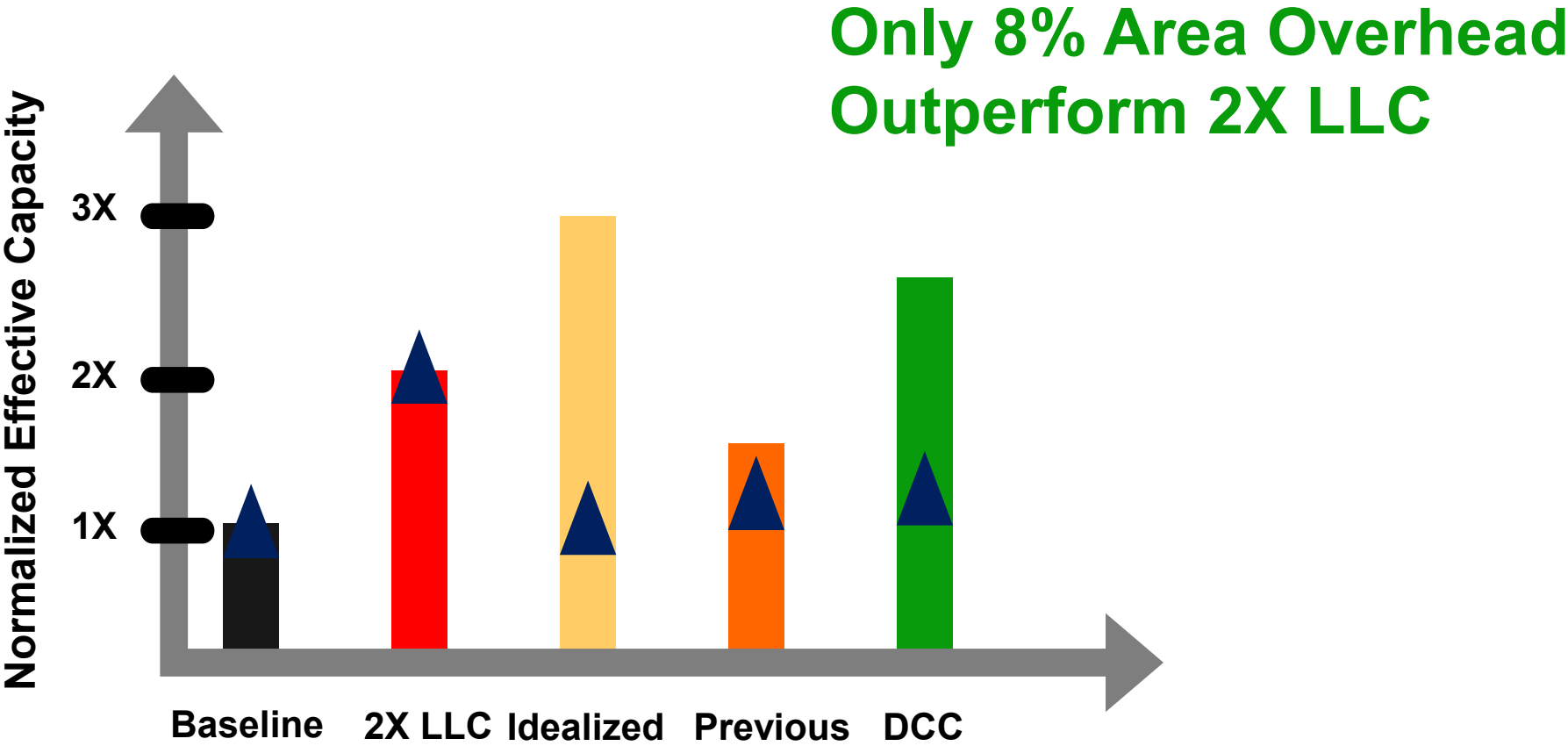
Non-Contiguous Sub-Blocks



- ~~— Limited number of tags~~
- ~~— Internal Fragmentation~~
- ~~— Re-compaction~~



Our Proposal: Decoupled Compressed Cache (DCC)





Our Proposal: Decoupled Compressed Cache (DCC)

Today at 1:30pm!

