Proposal

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1   General Design

This work will consist of modifying an existing compiler (gcc or llvm) to support LOCO as a backend for disaggregated memory. Generally this compiler will look up address locations on loads and stores to determine whether it is local/remote and will also determine whether it is cached or not. Additionally all cached data will be tagged with a dirty delta to allow for seamless release consistency. On releases data will be written back to its home-node and only modified data will be written back (scatter). If two nodes wish to write back the same byte-area they are in a data race and it is the programmers fault.

There will be major components in this design. They are as follows:

- Load/store compiler modification.
- synchronization primitive modification for OpenMP.
- non-cached memory will be stored as a hash map.

some outstanding questions to answer:

- does the local node cache its own data?
- does a system like this exist for TCP/IP